

DRAFT
Response to Comments
Remedial Investigation Report &
Baseline Risk Assessment

Volume 3 of 3

West Lake Landfill Operable Unit 2.
Bridgeton, Missouri



June 2005

HERST & ASSOCIATES, INC.

4630 South Highway 94
North Outer Road
St. Charles, Missouri 63304
Telephone: (636) 939-9111
Facsimile: (636) 939-9757

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Mei Carnahan, Governor • Stephen M. Mahfood, Director

COPY

DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

May 20, 1998

Mr. Vince Jones
Maryon Industries
13570 St. Charles Rock Road
Bridgeton, MO 63044

RE: West Lake Quarry & Material, 13570 St. Charles Rock Road, Bridgeton, MO
ST0013618, R0003874

Dear Mr. Jones:

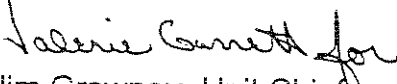
The Tanks Section of the Hazardous Waste Program has received the Schreiber, Yonley, & Associates free product recovery report dated April 22, 1998, for the site listed above. The Product Recovery Log contained in the report indicates significant amounts of petroleum product continues to appear in monitoring well MW-1. The amount of product observed (up to 30") would indicate that the problem is not attenuating. Please submit a corrective action plan to this department within sixty (60) days selecting a more aggressive approach to product recovery than is currently being applied. You may include in your correspondence the work plan for groundwater monitoring.

Direct questions regarding the Petroleum Storage Tank Insurance Fund to the Fund Administrator at (573) 761-4060 or (800) 765-2765.

If you have any questions regarding this letter, you may contact Mr. Marty Kasper of my staff at (573) 751-6822.

Sincerely,

HAZARDOUS WASTE PROGRAM


Jim Gowney, Unit Chief
Remediation Unit

JG:mkg

c: Mr. David Pate, Williams & Company
Mr. Ed Shepard, Schreiber, Yonley, & Associates
Mr. Mike Struckhoff, St Louis Regional Office
Mr. W.E. Whitaker, West Lake Quarry & Material Company

Underground Storage Tank (UST) Compliance with 1998 Upgrade Standards

Facility Name West Lake Quarry ST# 13618

Facility Mailing Address 13570 St Charles Rte Rd

Facility Location inside Bridgeton Landfill

Latitude: DEG _____ MIN _____ SEC _____ Longitude: DEG _____ MIN _____ SEC _____

Owner/Operator/Contact: Gerald Pollard Telephone Number: (314) 770-9352

Above information agrees with database? Yes ☐ No ☐ If No, provide registration form.

Maryon Asphalt

UPGRADE COMPLIANCE MECHANISM: (if yes, please provide details)

RECEIVED

Spill Bucket? _____ Overfill? _____

Corrosion Protection? Tanks: _____ Lines: NOV 16 1998

1 diesel 2 asphalt tanks
all removed

HAZARDOUS WASTE PROGRAM
MISSOURI DEPARTMENT OF
NATURAL RESOURCES

NON-UPGRADED TANKS IN USE: There is a pump & tank located
just south of landfill office in rad waste area

OWNER/OPERATOR PLANS FOR COMPLIANCE: IT is not in use.

Temporary Closure? V Permanent Closure? _____ Upgrade or Replace? _____

Planned Schedule for Compliance? (Contractor/Dates) _____

Did owner/operator request technical assistance? No

INFORMATION AND FORMS PROVIDED TO O/O:

- ☐ Don't Wait Until 1998 (EPA) ☐ Insurance Application/Information ☐ DNR LD Technical Bulletin
- ☐ DNR Upgrade Technical Bulletin ☐ Registration Form ☐ Closure Notice Form

West Lake Quarry & Mails Co.

5/18/98 letter to Marty Kasper.

ADDITIONAL COMMENTS: Contact Bill Whitaker at
West Lake Quarry, for verification

Tanks removed 7-8 years ago

Vincent Jones - Maryon Ind 1993-4

962-5100 - Schreiber & Yanley consultants
Ed Shepherd

Regional Office: APCP

Staff Name: Peter Yronwode

Date: 10/15/98

Upgrade Summary:

Upgraded ☐ Partial Upgrades ☐ No Upgrades ☐

Temporarily Closed ☐ Removed ☒

Submit completed form to HWP-Enforcement, Bruce Travis

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Mel Carnahan, Governor • Stephen M. Mahfood, Director

DIVISION OF ENVIRONMENTAL QUALITY

P.O. Box 176 Jefferson City, MO 65102-0176

November 13, 1998

Mr. Vince Jones
Maryon Industries
13570 St. Charles Rock Road
Bridgeton, MO 63044

RE: West Lake Quarry and Material, 13570 St. Charles Rock Road, Bridgeton, MO
ST0013618, R0003874

Dear Mr. Jones:

The Tanks Section of the Hazardous Waste Program has received and reviewed a work plan for groundwater monitoring dated May 18, 1998, for the site referenced above. The work plan is approved as written for one-year of monitoring on quarterly basis.

Historical data indicates that the extent of groundwater contamination to the east of MW-4A was not completely defined. Therefore, the department requests a work plan for further investigation of soil and groundwater contamination east of MW-4A within 45 days of receipt of this letter. Please submit along with your work plan a corrective action plan for a more aggressive product recovery from MW-1 as requested in the department's letter dated May 20, 1998.

We are looking forward to reviewing the next groundwater monitoring report within the next 90 days.

Please direct questions regarding the Petroleum Storage Tank Insurance Fund to the Fund Administrator at (573) 761-4060 or (800) 765-2765.

If you have any questions regarding this letter, you may contact Mr. Hashim Mukhtar of my staff at (573) 751-6822.

Sincerely,

HAZARDOUS WASTE PROGRAM

Jim Growney
Jim Growney, Chief
Remediation Unit

JLG:hml

c: Mr. David Pate, Williams & Company
Mr. Edward A. Shepard, Schreiber Yonley and Associates
St. Louis Regional Office



WEST LAKE COMPANIES

1515 N. WARSON RD., ST. LOUIS, MO 63132

STATEMENT OF REMITTANCE

CHECK NO. 022985

VENDOR NO.

INVOICE DATE	VENDOR INVOICE	P.O. NO.	GROSS AMOUNT	DISCOUNT	NET AMOUNT	
12-01-98	9812017		390.00		390.00	FULL
					390.00	TOTAL

DETACH AND RETAIN FOR YOUR RECORDS



WEST LAKE COMPANIES

1515 N. WARSON RD. • SUITE 253
ST. LOUIS, MISSOURI 63132
(314) 426-3091

MARK TWAIN BANK
8822 Laclede Road
St. Louis, MO 63124

12/03/98

CHECK NO. 022985
DATE 12-01-98
CHECK AMOUNT \$*****390.00

80-340
810

THREE HUNDRED NINETY AND 00/100*****

PAY
TO THE
ORDER • State of Missouri

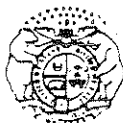
P.O. Box 176
Jefferson City, MO 65102-0176

⑈022985⑈ ⑆081003408⑆810041094 2⑈

Margaret A. Llewellyn

RECEIVED
DEC 3 1998

MISSOURI LAND
RECLAMATION COMMISSION



MISSOURI DEPARTMENT OF NATURAL RESOURCES
LAND RECLAMATION COMMISSION

PERMIT APPLICATION FOR INDUSTRIAL MINERAL MINES

RECEIVED
DEC 3 1998

P.O. BOX 176
JEFFERSON CITY, MO 65102

NAME OF CORPORATION, COMPANY, PARTNERSHIP OR INDIVIDUAL St Lake Quarry and Material Company		December 1, 1998	
ADDRESS 1515 N. Warson Road, Suite 253	CITY St. Louis	STATE MO	ZIP CODE 63132
CONTACT PERSON W. E. Whitaker		TELEPHONE NUMBER (314) 426-3091	

Check any that apply:

☐ New Permit ☒ Permit Renewal ☐ Permit Amendment ☐ Permit Revision ☐ Permit Expansion

SITE NAME OR NUMBER	ACRES TO BE PERMITTED		TOTAL ACRES FOR ALL SITES
	INSTREAM	ALL OTHER	
Neely's Landing		27	27

Fees - Complete A or B

A - For sand and gravel operators mining less than 5,000 tons/year
Permit Fee \$100.00
Number of new acres X \$35.00/acre \$
B - For ALL other operations
Permit Fee \$350.00
Number of sites 1 X \$40.00/site \$ 40.00
Number of new acres X \$35.00/acre \$
Total fees \$ 390.00

Bonding for all acreage EXCEPT instream - Complete A or B

A - For sand and gravel operators mining less than 5,000 tons/year
Number of new acres X \$500.00/acre \$
B - For ALL other open pit operations
Minimum per permit \$ 8,000.00
Acreage over 8 acres 19 X \$500.00/acre \$ 9,500.00
Number of new acres where topsoil will be sold
or discarded X \$4,500.00/acre \$ NA
Total bonding required \$ 17,500.00

☒ Check here if adequate bonding is already posted.

List all other Land Reclamation Commission permits previously or currently held by applicant or by companies owned or partially controlled by applicant. If none, write "none" below.

NAME OF COMPANY	PERMIT NUMBER	MINERAL COMMODITY	YEARS
NONE			

For any of the above which have been served Cessation of Operations or Bond Forfeiture, or have unabated Notices of Violation, please give:

PERMIT NUMBER	TYPE OF ACTION

I certify that all statements made on this application are correct, complete, and true, to the best of my knowledge.

SIGNATURE OF APPLICANT W. E. Whitaker TITLE President DATE December 1, 1998

Appeared before me this _____ day of _____, 19____, _____ to me personally known, who executed the above as their free acts and deeds.

NOTARY PUBLIC EMBOSSEER SEAL	STATE Missouri	COUNTY (OR CITY OF ST. LOUIS): St. Louis
	SUBSCRIBED AND SWORN BEFORE ME, THIS 1st DAY OF December 19 98	
	NOTARY PUBLIC SIGNATURE <u>Margaret G. Cusumano</u>	MY COMMISSION EXPIRES 11-05-02
	NOTARY PUBLIC NAME (TYPED OR PRINTED) Margaret G. Cusumano	

USE RUBBER STAMP IN CLEAR AREA BELOW

MARGARET G CUSUMANO
NOTARY PUBLIC STATE OF MISSOURI
ST. LOUIS COUNTY
MY COMMISSION EXP NOV 5, 2002

APPROVED BY (DIRECTOR'S REPRESENTATIVE) <u>[Signature]</u>	DATE APPROVED 12-11-98	PERMIT NUMBER 0046	EXPIRATION DATE 12-31-99
---	---------------------------	-----------------------	-----------------------------

ATTACH SITE INFORMATION FORM(S), MINE PLAN FORM(S), PROOF OF PUBLIC NOTICE, AND CONSENT OF ENTRY FORM (IF NEEDED)

LAND RECLAMATION COMMISSION
STATE OF MISSOURI

P.O. BOX 176
JEFFERSON CITY, MISSOURI 65102
314-751-4041

Permit To Engage in Surface Mining

LAND RECLAMATION COMMISSION

ISSUES TO

WESTLAKE QUARRY & MATERIAL COMPANY

Pursuant to "The Land Reclamation Act," RSMo. 1994, and on conformity with the statements in the application, a permit is hereby granted to engage in surface mining of limestone in the state of Missouri. The extent of the proposed mining operation(s) will be in 27 acres, more or less. The location of the operation(s) under this permit is as follows: Renewal

Cape Girardeau County S-28,29 T-33N R-14E Neely's Landing

This permit may be suspended or revoked upon violation of any or all of the conditions set forth in "The Land Reclamation Act," RSMo. 1994, or in such rules and regulations as are promulgated pursuant thereto by the Land Reclamation Commission.

IN WITNESS WHEREOF I have hereunto set my hand this 14th day of December, 19 98.


DIRECTOR OF STAFF
Land Reclamation Commission

Permit No. 0046
Effective Date 01/01/99
Expiration Date 12/31/99

*Proctine
99*



R-3874

WILLIAMS & COMPANY CONSULTING, INC.
THIRD PARTY ADMINISTRATION



January 13, 1999

RECEIVED

JAN 14 1999

Mr. Vince Jones
Maryon Industries
13570 St. Charles Rock Road
Bridgeton, MO 63044

HAZARDOUS WASTE
MANAGEMENT
DIVISION
STATE OF MISSOURI

RE: West Lake Quarry and Material, 13570 St. Charles Rock Road, Bridgeton, MO
ST 0013618, Claim 50554

Dear Mr. Jones:

We have reviewed the cost proposal letter for groundwater monitoring activities at the referenced location. Based on information available at this time, it has been determined that the site is eligible to receive benefits from the Petroleum Storage Tank Insurance Fund (PSTIF). The PSTIF reserves the right to deny all or part of the costs based upon our investigation of this project.

Please carefully review the PSTIF Claim Kit for guidance on the claim process. Page 12 of the Claim Kit specifically references claims involving long term groundwater monitoring. It is your responsibility to understand what you must do to document your claim. Call this office or your claims adjuster for a free copy of the Claim Kit if you do not have one.

The costs outlined in your cost proposal are generally reasonable. With this letter we are authorizing total expenditures not to exceed \$8,000.00 for completion of four (4) quarters of groundwater monitoring. If you believe costs will exceed the amount budgeted, you must get our approval before proceeding.

Should you have any questions, please call me at (800) 765-2765.

Sincerely,

WILLIAMS & COMPANY CONSULTING, INC.

David L. Patc, PG
PSTIF Claims Manager

DLP/bls

C: Hashim Mukhtar, DNR
Ed Shepard, Schreiber Yonley and Associates
William Werner, The Stolar Partnership

Petroleum Storage Tank Insurance Fund

P.O. BOX 104116 • JEFFERSON CITY, MO 65110-4116 • PHONE (800) 765-2765 • FAX (573) 761-4062

Existence of Former Existence of Underground Storage Tank Sites
Pursuant to House Bill No. 251

UT0013618

Per HB 251, forms must be postmarked by August 27, 1995.

Name of Owner West Lake Quarry and Material Company		Name of Facility Maryon Industries, Inc.	
Address of Owner 1515 N. Warson Road, Suite 253		Address of Facility West Lake Asphalt Plant	
City St. Louis		City Bridgeton	
State MO		State MO	
Zip Code 63132		Zip Code 63044	
Country St. Louis		Country St. Louis	
Owner's Phone Number (314) 426-3091		Facility's Phone Number (314) 349-8399	
Signature of Owner/Agent W. E. Whitaker, President		Signature of Contact Person at Facility Ed Shepard	
Date August 25, 1995		Date Schreiber, Gram & Yonley	
Facility Location (if known) Deg Secs Unknown		Facility Location (if known) Deg Mins	

TANK NUMBER	1*				
STATUS OF TANK In Use (C) Out of Use - temporary (T) Out of Use - permanent (P) Removed from ground (R)	R				
PRODUCT STORED -Petroleum type s (Diesel-D, Gasoline-G, Waste Oil-W, etc) -Hazardous Substances - H. -Provide CAS No. for Haz. Substance	D				
TANK MATERIAL -e.g., steel, fiberglass, etc; -if unknown, U.	Steel				
SIZE -if unknown, U.	10,000 Gallon				
DATE INSTALLED (MO./YR.) -approximate or, if unknown, U.	1965				
DATE OUT-OF-USE (MO./YR.) -approximate or, if unknown, U.	3/93				
DATE PERMANENTLY CLOSED (MO./YR.) -for tanks either filled in place or removed -approximate or, if unknown, U.	3/93				

Return this form to: ATTN: UST Coordinator
Missouri Department of Natural Resources -
HWP
P.O. Box 176
Jefferson City, MO 65102-0176

THIS TANK IS ALREADY REGISTERED AS UT#0013618;LU# 03874. This additional form is being filed in response to a letter from Williams & Company Consulting, Inc. dated August 8, 1995, and follow up telephone conversation with MDNR, and is not intended to indicate the presence of an additional tank.

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER POLLUTION CONTROL PROGRAM
UST CLOSURE REPORT PART A (PAGE 1)

FOR MDNR USE ONLY

Date received _____ County St. Louis UT# 0013618 OWID 10412
Region SLRO LSP# LU 3874

SECTION I FACILITIES INFORMATION

Facilities name Westlake Companies UT# 0013618
Address 13570 St. Charles Rock Road Latitude _____
County St. Louis City Bridgeton Zip code 63044 Longitude _____
Telephone 314-739-1122 Section, township, and range _____
Date of Project Initiation April 10, 1993 Date of Project Completion April 26, 1993

SECTION II USTs CLOSED

Tank #	Capacity (gal)	Age	Date Removed from Service (use)	UST Construction Material	Product Stored	Method of Closure
1	2,000	11	4/93	STL	Unlead	Removed
2	10,000	12	1/92	STL	Unlead	Removed
4	10,800	21	3/93	STL	Diesel	Removed
5	10,000	21	1/92	STL	Diesel	Removed
6	10,000	16	3/93	STL	Diesel	Removed
8	1,000	33	3/93	STL	Waste Oil	Removed
11	10,000	25	3/93	STL	Diesel	Removed

Attach Documentation of Tank Cleaning ☒ Removal, In-place

SECTION III UST OWNER INFORMATION

Name Westlake Companies
Address 12976 St. Charles Rock Road
County St. Louis City Bridgeton Zip Code 63044
Contact Person B. Whitaker Telephone 314-739-1122

SECTION IV INFORMATION ON PARTY PERFORMING CLOSURE

Name ADR/St. Louis
Address P.O. Box 182
County St. Charles City St. Charles Zip Code 63302
Contact Person Patrick Reeves Telephone 314-947-9963

SECTION V TANK DISPOSAL INFORMATION

Tanks were transported to Kiesel Oil Company
Branch Street Facility, St. Louis, Mo.
for: ☒ recycle (salvage) or ☐ landfill or ☐ unregulated use
Attach appropriate documentation of tank disposal ☒

SECTION VI SOIL DISPOSAL INFORMATION

_____ cubic yards of soil excavated See Supplementary Data:
_____ cubic yards of non-contaminated soil returned to pit. Excavated soils returned to pit.
_____ cubic yards of contaminated soil disposed or treated at _____

Attach appropriate documentation of soil disposal or treatment

Attach copy of "Virgin Product Disposal Form" or "Special Waste Form", as appropriate

N/A

8

M

4-27-05

ABB

REQUEST FOR RECORDS

DATE: April 27, 2005
TO: Ken Hise
Records Center
FROM: Teri Bibbs
DNR
1738 East Elm Street
SUBJECT: Westlake Quarry & Materials Co.

Hi Ken. I need all files for the above mentioned company from the following boxes as soon as possible. PLEASE!

3496. ☒
7530 ☒
30275 ☒
34240 ☒
35930 ☒
36262 ☒
52308 ☒
66281 ☒

If you have any questions, please call me at 751-0707. Thanks.

Teri

1738

ST 13613
R 3874

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Mel Carnahan, Governor • Stephen M. Mahle, Director

DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

March 5, 1998

Mr. Vince Jones
Maryon Industries, Incorporated
150 Weldon Parkway
Maryland Heights, MO 63043

RE: West Lake Quarry and Materials (former), 13570 St. Charles Rock Road,
Bridgeton, MO - ST0013618, R0003874

Dear Mr Jones:

The Tanks Section of the Hazardous Waste Program would appreciate an update for the above referenced site. Please submit a project status report within forty-five days of receipt of this letter.

Please direct questions regarding the Petroleum Storage Tank Insurance Fund to the Fund Administrator at (573) 761-4060 or (800) 765-2765.

If you have any questions regarding this letter, you may contact Mr. Marty Kasper of my staff at (573) 751-6822.

Sincerely,

HAZARDOUS WASTE PROGRAM



Jim Growney, Unit Chief
Remediation Unit

JG:mks

c: Mr. Ed Shepard, Schreiber, Yonley, & Associates
Mr. David Pate, Williams and Company
Mr. Mike Struckhoff, St. Louis Regional Office
BC: Mr. Bruce Travis, HWP, Enforcement Section

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Mel Carnahan, Governor • David A. Shott, Director

DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

DATE: August 19, 1996

TO: File

FROM: Elena Jobe, Data Coordination Unit Chief,
Hazardous Waste Program, DEQ *EJ*

SUBJECT: Owner and Facility Information

We sent a printout of facility information and an addressed, stamped return envelope to this owner for corrections in July 1996. If the owner sent this information back, we updated it in the computer and placed in the file. If the owner did not send any information back this letter serves as documentation of an attempt by the Hazardous Waste Program to contact this owner and update our information. In the event the Postal Service could not deliver we are documenting that in the files as well.

EAJ

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Mel Carnahan, Governor • David A. Shott, Director

DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

June 30, 1995

ESP FILE NO.
LU#3874

Mr. Vince Jones
Maryon Industries, Inc.
150 Weldon Parkway
Maryland Heights, MO 63043

Dear Mr. Jones:

RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

The Leaking Underground Storage Tank (LUST) Unit of the Missouri Department of Natural Resources has received and reviewed the Schreiber, Grana & Yonley June 21, 1995, Site Investigation Report relevant to the subject site.

Based on excessive soil and groundwater contamination detected in the vicinity of MW-1A, MW-4A, and MW-5A, the LUST Unit requests that Maryon Industries, Inc. submit a corrective action plan proposal addressing these problems. This plan should comply with existing underground storage tank regulations and currently accepted guidance procedures and should be forwarded to this unit within 45 days from receipt of this letter.

If you have any questions, please do not hesitate to contact Steve Johnston at the Leaking Underground Storage Tank Unit at 314/526-6023 or 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY



Alan Reinkemeyer
Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

AR:sjj

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office
Mr. Ed Shepard, Schreiber, Grana & Yonley, Inc., 271 Wolfner Drive,
St. Louis, MO 63026
Mr. William Whitaker, Westlake Companies, 12976 St Charles Rock Road,
Bridgeton, MO 63044



MISSOURI DEPARTMENT OF NATURAL RESOURCES
TELEPHONE OR CONFERENCE RECORD

FILE <u>Lu 3874</u>		DATE <u>1/11/95</u>	
TELEPHONE ▶ <input checked="" type="checkbox"/> INCOMING <input type="checkbox"/> OUTGOING		CONFERENCE ▶ <input type="checkbox"/> FIELD <input type="checkbox"/> OFFICE	
SUBJECT <u>above file</u>			
PERSONS INVOLVED			
NAME <u>Ed Shepard</u> <u>Tom Maxwell</u>		REPRESENTATIVE <u>SGY</u> <u>ESP</u>	
SUMMARY OF CONVERSATION <u>Ed wanted us to know that</u> <u>his report on #3874 would be</u> <u>in by 25 Jan</u>			
ACTION TAKEN <u>None</u>			
FINAL RESULTS			
SIGNATURE <u>[Signature]</u>		DATE <u>1/11/95</u>	

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Nel Carnahan, Governor • David A. Shorr, Director

DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

January 10, 1995

ESP FILE NO.

LU#3874

CERTIFIED MAIL #P144 644 954
RETURN RECEIPT REQUESTED

Mr. B. Whitaker
Westlake Companies
12976 St. Charles Rock Road
Bridgeton, MO 63044

Dear Mr. Whitaker:

RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

The Leaking Underground Storage Tank (LUST) Unit of the Missouri Department of Natural Resources has received and reviewed the ADR St. Louis Report dated December 9, 1994, pertaining to monitoring well No. 4's "pump & purge" activities between December 17, 1993, and June 26, 1994. However, the LUST Unit has not received the required free product recovery reports pertaining to monitoring well No. 1A, installed by Schreiber, Grana, and Yonley, as mandated by 10CSR20-10.064.

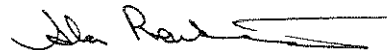
Since the initial free product recovery and monthly reports, to include the work plan addendum for MW-1A, have missed their suspense dates, the LUST Unit will require a status update covering all site activities.

Please submit the requested information to this department within 15 days from receipt of this letter.

If you have any questions, please do not hesitate to contact Dave Bellamy at the Leaking Underground Storage Tank Unit at 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY



Alan Reinkemeyer
Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

AR:jlh

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office
Mr. Ed Shepard, Schreiber, Grana, & Yonley, Inc., 271 Wolfner Drive,
St. Louis, MO 63026
Mr. Vince Jones, Marion Industries, Inc., 150 Weldon Parkway,
Maryland Heights, MO 64043

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

Mel Carnahan, Governor • David A. Shorn, Director

ESP FILE NO.
LU#3874

June 28, 1994

Mr. B. Whitaker
Westlake Companies
12976 St. Charles Rock Road
Bridgeton, MO 63044

Dear Mr. Whitaker:

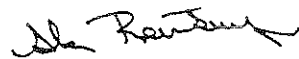
RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

The Missouri Department of Natural Resources would appreciate an update for the above referenced site. Please submit a project status report which focuses on efforts made to define the extent of soil and groundwater contamination within 30 days of receipt of this letter.

If you have any questions, please do not hesitate to call Anita Schroeter at our department at 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY



Alan Reinkemeyer
Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

AR:sla

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office
Pat Reeves, ADR/St. Louis, P.O. Box 182, St. Charles, MO 63302

ST/3618

OWNER NAME WEST LAKE QUARRY & MATERIAL CO.

OWNER ID # OW10412

FEE GROUP 2 DATE OF INITIAL BILLING 04-12-91

DATE April 18, 1994

JMD
4/18/94

FAC ID#	# OF TANKS	REGULAT. FEES PD.	REGULAT. FEES DUE	USTIF FEES PD.	USTIF FEE DUE	TOTAL DUE
UT13614	4	<u>300.00</u>	<u>-0.00</u>	<u>400.00</u>	<u>-0.00</u>	<u>-0.00</u>
UT13615 SOLD - NO REG FORMS FOR LEASEE	5	<u>75.00</u>	<u>300.00</u>	<u>500.00</u>	<u>-0.00</u>	<u>300.00</u>
UT13616	3	<u>135.00</u>	<u>90.00</u>	<u>300.00</u>	<u>-0.00</u>	<u>90.00</u>
UT13618	9-11	<u>675.00</u>	<u>-0.00</u>	<u>1100.00</u>	<u>-0.00</u>	<u>-0.00</u>
4 FAC.	21-23	<u>1185.00</u>	<u>390.00</u>	<u>2300.00</u>	<u>-0.00</u>	<u>390.00</u>
UT13617 SOLD	4	<u>75.00</u>	<u>225.00</u>	<u>400.00</u>	<u>-0.00</u>	<u>225.00</u>
ORIG. TOTALS		<u>1260.00</u>	<u>615.00</u>	<u>2700.00</u> O.V.E.R P.A.I.D.B.Y <u>300.00</u>	<u>-0.00</u>	<u>615.00</u>

Polin Fu

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Mel Carnahan, Governor • David A. Shorr, Director

DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

April 1, 1994

ESP FILE NO.
LU3874

B. Whitaker
Westlake Companies
12976 St. Charles Rock Road
Bridgeton, MO 63044

Dear B. Whitaker:

RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

The Missouri Department of Natural Resources has received and reviewed the March 18, 1994, Update Report for the above referenced site. Analytical data contained in the report indicate excessive water contamination in the vicinity of Well #1, Well #2, and Well #4.

The Leaking Underground Storage Tank Unit will be looking forward to a proposal to define the extent of soil and groundwater contamination with the additional data you are intending to supply.

Efforts should be taken to capture any free product in the vicinity of Well #4. A report on the recovery activities should be provided within 45 days. The free product recovery should include the information described in the Corrective Action Guidance Document.

If you have any questions, please do not hesitate to contact Anita Schroeter at our department at 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY


C. Dean Martin
Acting Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

CDM:gc

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office



MISSOURI DEPARTMENT OF NATURAL RESOURCES
TELEPHONE OR CONFERENCE RECORD

FILE <i>LU3874</i>		DATE <i>4/7/74</i>	
TELEPHONE ▶	<input checked="" type="checkbox"/> INCOMING <input type="checkbox"/> OUTGOING	CONFERENCE ▶	<input type="checkbox"/> FIELD <input type="checkbox"/> OFFICE
SUBJECT <i>What was wrong with MW-2?</i>			
PERSONS INVOLVED			
NAME <i>Pat Reeves</i>		REPRESENTATIVE <i>ADR</i>	
SUMMARY OF CONVERSATION <i>The December 23 sample taken from MW-2 after purging was OK. The December 17 sample was taken prior to purging. Was the above indicated in the report I can not recall if it was I apologize there should be no problem with MW-2. Please He seemed to react as if it wasn't, so I asked that he clarify this in his next correspondence.</i> <i>He may also address that fire product was never present only a skim in the next letter.</i>			
ACTION TAKEN			
FINAL RESULTS			
SIGNATURE <i>Quiter M. Schroeter</i>		DATE <i>4/7/74</i>	

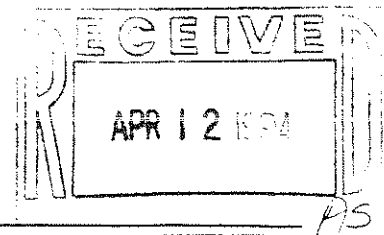
ADR

ST. LOUIS

P.O. Box 182

St. Charles, MO 63302

314-947-9963



DEPARTMENT OF NATURAL RESOURCES
P.O. BOX 176
JEFFERSON CITY, MO. 65102

Attn: ESP / Anita Schroeter
RE: West Lake Quarry & Material Co.

File LU3874

April 7, 1994

Ms. Schroeter,

Thank you for sending a copy of the response to our submittal of March 18, 1994. In reviewing the information, as discussed with you this morning, additional information regarding the assessment and well-pump tests associated with the quarter are being processed.

In reviewing the data (analytical) basis for including Well # 2 in a classification of "excessive levels", the summary report will clarify a delineation with respect to the parameters regarding the sampling.

Primarily, the wells were not purged or perfected until December 20th, 1993. The analytical results, obtained on December 23, represent the well samples after completing the development. Using that specific data, Well # 2 should not be considered as "excessive".

In accordance with the SC and remedial investigation, a sample will be acquired from all four wells, for second quarter reporting. Upon receipt of the analysis, an appropriate evaluation and determination can be made with respect to supporting the "water condition".

Essentially, I am sure the department would appreciate information in an expeditious manner. However, in the future, we believe that a summary report with submittals, may help to avoid misinterpretations or assumptions made on immediate data. Accordingly, future reporting will include a summary overview, with perspective to ongoing activities and protocol.

Respectfully,

A handwritten signature in dark ink, appearing to read "Patrick Reeves".

Patrick Reeves

ADR

ST. LOUIS

FEB 18 1994

AS

P.O. Box 182

St. Charles, MO 63302

314-947-9963

Department of Natural Resources
E.S.P. - Anita Schroeter
P.O. Box 176
Jefferson City, MO. 65102

February 15, 1994
RE: LU 3874 Westlake Quarry & Material Company

Ms. Schroeter,

As you are aware, the severe weather conditions during the past few months have presented problems with attempting to develop reliable field data. The temperatures below freezing and periods of ice and snow have delayed our preliminary investigation and interim action.

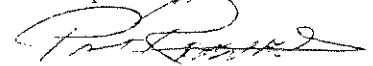
With respect to your request of the EPA investigation, as previously reported, the site is adjacent to property under their investigation. However, as the Westlake Quarry and Material Company site does not involve activity associated to the low-level radionuclide investigation, we are not in a position to provide such data. A preliminary screening was conducted for the presence of radio-active materials in the work site areas which indicated "no elevated levels" were detected above normal background readings.

During December, four monitoring wells were installed. A boring log with relative data developed from the activity is presently being recorded to submit with our preliminary confirmation of previous site information or amendments as may be discovered, which substantially, provides the basis for our scope of work associated to the interim activity.

Provided the weather conditions do not continue to delay us, we will resume field investigation activities during the latter part of February. In any event, an update of available information will be sent to your office by March 18, 1994.

Should you have any immediate inquiry, please contact me directly.

Respectfully,



Patrick Reeves

ADR

ST. LOUIS

FEB 22 1994

P.O. Box 182

St. Charles, MO 63302

314-947-9963

Department of Natural Resources
ESP : Anita Schroeter
P.O.Box 176
Jefferson City, Mo. 65102

February 17, 1994

RE: LU 3874

Response from your office (02/15/94)

Ms. Schroeter,

Pleased be advised, a communication issued from our office regarding the referenced facility, was sent on the same day as your letter. If you have not received the letter, a copy is enclosed for your reference. *Enclosure same as 2/15/94 letter*

The contents of the letter responded to your acknowledgment of January 10, 1994, regarding our previous conversation. As stated, we are currently resuming the site investigation to develop an accurate assessment of the former UST locations.

However, your recent letter presents a significant concern with reference to your statement regarding "bankruptcy". During the course of our activities and subsequent "conversations", there has never been any document or statement provided by our firm regarding, suggesting or implying, any reference to Westlake Quarry & Material Company's financial position.

With respect to "ceasing operation", Westlake Quarry & Material Company has leased some plant operations, reducing their direct involvement in the "day to day" operations. However, this presents no representation of their financial condition.

We are requesting a statement or response, be issued to all parties to correct any reflection or representation associated with Westlake Quarry & Material Company's financial condition, which may be construed or interpreted negatively.

Sincerely,

Patrick Reeves
Patrick Reeves

PR/pr
c:W/L B. Whitaker

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Mel Carnahan, Governor • David A. Shorr, Director

DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

February 28, 1994

ESP FILE NO.
#LU3874

Mr. B. Whitaker
Westlake Companies
12976 St. Charles Rock Road
Bridgeton, MO 63044

Dear Mr. Whitaker:

RE: Westlake, 13570, St. Charles Rock Road, Bridgeton, MO

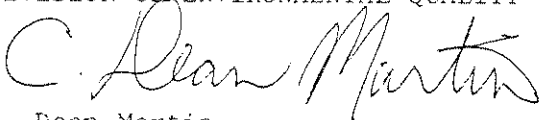
The Leaking Underground Storage Tank Unit of the Missouri Department of Natural Resources has received and reviewed the February 15 and 17, 1994, letters from Pat Reeves of ADR. Our unit will be looking forward to the investigation report to be received by March 18, 1994.

As far as correcting any comments that could be construed as negative, our unit does not believe any such comments were made. However, we do apologize for any alarm that may have been caused by our February 15, 1994, letter. We do appreciate the fact that Westlake Quarry and Materials Company is in good financial standing.

If you have any questions, please do not hesitate to contact Anita Schroeter at the Leaking Underground Storage Tank Unit at 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY



C. Dean Martin
Acting Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

CDM:jlh

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office
Doug Nelson, Assistant General, Attorney General's Office
Mr. Pat Reeves, ADR/St. Louis, P.O. Box 182, St. Charles, MO 63302



RECYCLED PAPER

Owner Name:

Owner I.D.

Fee Group

Today's Date

[illegible]



MISSOURI DEPARTMENT OF NATURAL RESOURCES
TELEPHONE OR CONFERENCE RECORD

FILE <u>L43874</u>		DATE <u>1/5/93</u>	
TELEPHONE	<input type="checkbox"/> INCOMING <input checked="" type="checkbox"/> OUTGOING	CONFERENCE	<input type="checkbox"/> FIELD <input type="checkbox"/> OFFICE
SUBJECT <u>Contact between Sheeley and Pat. Reeves</u>			
PERSONS INVOLVED			
NAME <u>Ron Sheeley</u>		REPRESENTATIVE <u>Previous ESP employee at MHTD</u>	
SUMMARY OF CONVERSATION <u>He has not been on site. He did speak with Reeves on the phone and emphasized that the leaching from the ^{landfill} will have to be verified. He quoted no specific cleanup levels but did indicate 500ppm TPH was possible if they had supportive data.</u>			
ACTION TAKEN			
FINAL RESULTS			

SIGNATURE

Walter Schroeter

DATE

1/5/93

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER POLLUTION CONTROL PROGRAM
UST CLOSURE NOTICE

FOR STATE AGENCY USE ONLY

Date received 3-26-93 County St. Louis UT# 0013618 OW ID 0010412
Region SLRO

SECTION I FACILITIES INFORMATION

Facilities name WESTLAKE QUARRY & MATERIAL CO. UT# 13618
Address 13570 ST CHARLES ROCK RD.
County ST. LOUIS City BRIDGETON Zip code 63044
Telephone 314-737-1122
Estimated Date of Project Initiation: 4/10/93 Estimated Date of Project Completion: 4/25/93

SECTION II USTs CLOSED

Tank #	Capacity (gal)	Year Installed	Date Removed from Service (use)	UST Construction Material	Product Stored	Method of Closure*
1	2000	82	3-93	STEEL	UNLEAD	R
2	10,000	81	1-92	"	UNLEAD	R
4	10,800	72	3-93	"	DIESEL	R
5	10,000	72	1-92	"	DIESEL	R
6	10,000	77	3-93	"	DIESEL	R
8	1,000	60	3-93	"	WASTE OIL	R

Attach additional sheets if necessary

* Removal, In-place

SECTION III USTs REGISTRATION

Are USTs registered? ☒ Yes ☐ No
If no, attach completed notification of UST form.
Are or were USTs in use on or after August 28, 1989? ☒ Yes ☐ No
If yes, has \$100 fee per UST been paid? ☒ Yes ☐ No
If no, attach \$100/UST check

SECTION IV UST OWNER INFORMATION

SECTION V PARTY PERFORMING CLOSURE

Name WESTLAKE QUARRY & MATERIAL CO. Name ADR/ST LOUIS
Address 12976 ST CHARLES ROCK RD. Address P.O. BOX 182
County ST LOUIS City BRIDGETON Zip Code 63044 County ST CHARLES City ST CHARLES Zip Code 63702
Contact Person B. WAITHER Telephone 734-1122 Contact Person PAUL REYNOLDS Telephone 947-7763

SECTION VI CERTIFICATION OF PROPER CLOSURE

I (name) PAUL REYNOLDS (please print) certify that API-1604 and MDNR procedures will be followed for safety, excavation, handling and disposal of soils and or other materials; and that soils from beneath the tanks, distribution lines and pump islands will be analyzed in accordance with the requirements outlined in the Underground Storage Tank Closure Guidance Document

SIGNATURE OF RESPONSIBLE PARTY PAUL REYNOLDS DATE 3/25/93

SECTION VII CLOSURE DATE

Closure may be completed on or after (Date) April 26, 1993
Signature of authorized MDNR representative James Harris (Date) 3/30/93

SECTION VIII WAIVER OF 30-DAY PERIOD

Alternative date of planned closure completion _____
Authorized MDNR representative _____ Date _____ Regional Office _____

State Agency Use Only

State Agency Use Only

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Mel Carnahan, Governor • David A. Shorr, Director

DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

May 5, 1993

ESP FILE NO.
#LU3874

Mr. Pat Reeves
ADR Environmental
P.O. Box 182
St. Charles, MO 63302

Dear Mr. Reeves:

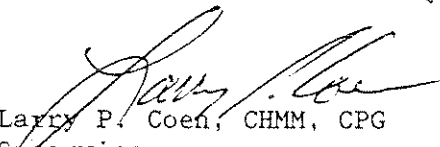
RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

The Leaking Underground Storage Tank (LUST) Unit of the Missouri Department of Natural Resources has received and reviewed Spill Report #04223-KT-1612 and based on the information provided, a petroleum release has occurred. The LUST Unit will require a site assessment report to be submitted within 45 days.

If you have any questions, please do not hesitate to contact Greg Bennett at the Leaking Underground Storage Tank Unit at 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY


Larry P. Coen, CHMM, CPG
Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

LPC:jlh

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office

3274

MISSOURI DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL EMERGENCY RESPONSE REPORT

Distribution:
SLRO
LUST

04223-KT -1612
Spill Number
04/22/93
Date Closed

County: ST. LOUIS
04/22/93
KT
Initials

Dist. Date: 5 /11/93

16:12
Time

REPORTER CODE: Spiller

TYPE (X-CODE): Petroleum - Fixed fac.

NAME	ORGANIZATION	ADDRESS	PHONE
EER Called by A: PAT REEVES	ADR	ST. LOUIS, MO	- - 0
Reported to A by B:			- - 0
Reported to B by C:			- - 0

RESPONSIBLE PARTY

COMPANY: WESTLAKE COMPANY CONTACT NAME:
STREET: 13570 ST. CHARLES CITY/COUNTY: BRIDGETON
STATE: MO ZIP: TELEPHONE - AREA CODE: 314 7 DIGIT: 947-9963

Actual Spill? Y Incident Type: Ug Tank Project No:
Incident Date: / / Time: : 0 Discovery date: 04/22/93 Time: : 0
Incident Location: 13570 ST. CHARLES ROCK ROAD
Incident City: BRIDGETON Incident County: ST. LOUIS State: MO
Primary Mat. Involved: Waste Oil Amt. Spilled: 0 unknown qty
Exact Name or Other Materials Involved: GAS, DIESEL, WASTE OIL

SUMMARY INFORMATION

INCIDENT DESCRIPTION

ENVIRONMENTAL FIRM FOR RP
REPORTS A RELEASE WAS
DISCOVERED DURING UNDER-
GROUND TANK CLOSURES.

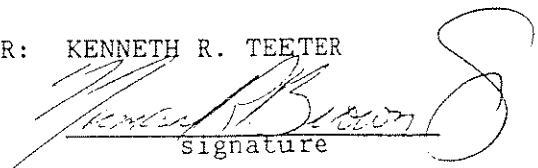
INCIDENT RESPONSE

EER REFERRED TO THE
LUST UNIT FOR
INVESTIGATION.

Notifications:

RESPONDING AGENCY: MDNR
ON-SCENE RESPONSE?: (Y/N) : N
BY:

DUTY OFFICER: KENNETH R. TEETER


signature



MISSOURI DEPARTMENT OF NATURAL RESOURCES
TELEPHONE OR CONFERENCE RECORD

FILE <u>LU 3874</u>		DATE <u>6/25/93</u>	
TELEPHONE <input checked="" type="checkbox"/> INCOMING <input type="checkbox"/> OUTGOING		CONFERENCE <input type="checkbox"/> FIELD <input checked="" type="checkbox"/> OFFICE	
SUBJECT <u>status of closure and resultant investigation procedures</u>			
PERSONS INVOLVED			
NAME <u>Pat Reeves</u>		REPRESENTATIVE <u>ADR (314) 947-9963</u>	
<u>Steve Johnston</u>		<u>MDNR</u>	
SUMMARY OF CONVERSATION <u>Reviewed USK Closure Documentation and possible remediation alternatives. We agreed that the most urgent issues were:</u> (plugs) <u>1.) A limited assessment in and around former tank excavations of T4 and T7 and,</u> <u>2.) an investigation of the depth of gw. in these areas to see if groundwater is or has been affected.</u> <u>3.) and to sample T7 (former excavated backfill) to determine contamination levels.</u> <u>ADR will prepare an assessment plan proposal and send to us very soon.</u>			
ACTION TAKEN			
FINAL RESULTS			
SIGNATURE <u>Johnston</u>		DATE <u>6/25/93</u>	

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Mel Carnahan, Governor • David A. Shorr, Director

DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

July 6, 1993

ESP FILE NO.
#LU3874

Mr. Pat Reeves
ADR/St. Louis
P.O. Box 182
St. Charles, MO 63302

Dear Mr. Reeves:

RE: Westlake Companies, 13570 St. Charles Rock Road, Bridgeton, MO

The Leaking Underground Storage Tank (LUST) Unit of the Missouri Department of Natural Resources has received and reviewed the UST Closure Report document relevant to the Westlake Companies site referenced above.

The LUST Unit looks forward to reviewing ADR's Assessment Plan Proposal to follow in the upcoming weeks.

If you have any questions, please do not hesitate to contact Steve Johnston at the Leaking Underground Storage Tank Unit at 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY

Ron Sheely for L.C.

Larry P. Coen, CHMM, CPG
Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

LPC:daw

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office



WEST LAKE

West Lake Quarry & Material Company

12976 St. Charles Rock Rd.
Bridgeton, MO 63044
(314) 739-1122

5115618
AUG 05 1993
W.E. Whitaker
President

July 30, 1993

Mr. Frederick J. Hutson
Mo. Department of Natural Resources
UST Unit
P.O. Box 176
Jefferson City, Missouri 65102

Re: Invoice #07149310412

Dear Mr. Hutson:

The following is a detailed explanation supporting the installment fee of \$45.00 for the above referenced invoice for West Lake Quarry and Material Company (OW10412).

1. Barnhart Quarry (Facility ID #UT0013614) has been sold. The four (4) tanks at that facility were removed and closure was issued by the Department of Natural Resources. The remaining installment fees were paid in full at the time of closure.

2. Gray's Point Quarry (Facility ID #UT0013615) has been leased to Tower Rock Stone Company at P.O. Box 4248, Scott City, Missouri 63780. Our lease provides that Tower Rock Stone Company assume the responsibility for any remaining fee installments on the five (5) tanks and any future monitoring and/or removal if required. Therefore, you should direct any reference to these tanks to Tower Rock Stone Company.

3. Neely's Landing Quarry (Facility ID #UT0013616) has three (3) remaining underground tanks which are the responsibility of West Lake Quarry and Material Company and have been invoiced properly.

4. West Lake Quarry and Material Company (Facility ID #UT0013617) was sold. The buyer of the quarry was Bellefontaine Quarry, Inc. at 14201 Lewis & Clark Blvd, Florissant, Missouri 63034. In our sale agreement, Bellefontaine Quarry assumed responsibility for the three (3) remaining tanks at that site. Two (2) tanks were removed and closure was received by the Department of Natural Resources prior to the sale to Bellefontaine Quarry. The sixth tank was at our asphalt plant which was sold to Maryon Industries, Inc. at 150 Weldon Parkway, Suite 103, St. Louis, Missouri 63043. Maryon Industries has agreed to accept responsibility for this tank in the sale agreement. Therefore, you should direct any reference to this tank to Maryon Industries.

AUG 05 1993

I N V O I C E
For Underground Storage Tank Registration Fees

O W.E. WHITAKER
W WEST LAKE QUARRY & MATERIAL CO
N 12976 ST CHARLES ROCK ROAD
E BRIDGETON MO 63044
R OW10412 5 21 2

Make payable / Remit to: MO Dept. of Natural Resources
ATTN: UST Unit
P.O. Box 176
Jefferson City, MO 65102

Terms: net 30 days

Invoice # 07149310412

Questions? call (314) 751-7538

Facility Name and Address	Facility ID #	Tanks eligible for Registration fees	Registration Fee Installment
BARNHART QUARRY PO BOX 218 BARNHART MO 63012	UT0013614	4 tanks	\$60.00
GRAY'S POINT QUARRY RT 2 BOX 2130 SCOTT CITY MO 63780	UT0013615	5 tanks	\$75.00
NEELY'S LANDING QUARRY RT 4 BOX 104A JACKSON MO 63755	UT0013616	3 tanks	\$45.00
WEST LAKE QUARRY & MATERIAL CO 14201 LEWIS & CLARK BLVD FLORISSANT MO 63034	UT0013617	6 tanks	\$90.00
WEST LAKE QUARRY & MATERIAL CO 13570 ST CHARLES ROCK ROAD BJ ETON MO 63044	UT0013618	9 tanks	\$135.00
Totals for: OW10412		Fee eligible tanks 27	Total due for all tanks \$2,025
WEST LAKE QUARRY & MATERIAL CO		Pay EITHER the registration fee installment, OR the total balance due.	Paid to date \$1,215
		Installment \$405.00	Total balance due \$810

NOTES: If these fees have already been paid, or if corrections are needed, contact the UST unit at (314) 751-7538 to make corrections to payments. If there has been a change of status for tanks or facilities, an amended Notification Form IS REQUIRED. Contact the UST unit @ (314) 751-6822 to obtain a form. It is the responsibility of the Owner to notify the Department of changes to facility records. RETURN THIS FORM WITH PAYMENT.

pd 7-30-93 JMD
CK # 011722



MISSOURI DEPARTMENT OF NATURAL RESOURCES
TELEPHONE OR CONFERENCE RECORD

FILE L43874		DATE 11/17/93	
TELEPHONE ▶	<input checked="" type="checkbox"/> INCOMING <input type="checkbox"/> OUTGOING	CONFERENCE ▶	<input type="checkbox"/> FIELD <input type="checkbox"/> OFFICE
SUBJECT Position Westlake is considering			
PERSONS INVOLVED			
NAME Pat Reeves		REPRESENTATIVE ADR	
SUMMARY OF CONVERSATION Laves indicated that Steeley of ESP had been on site and expressed concern for 3 of the 7 tanks removed. Also Steeley had indicated the 500 ppm TPH cleanup level from the diagram. For the high TPH contamination a soil washing is being considered. He spoke of requesting a health risk assessment. Also he spoke of this possibly being classified into the category classification for EPA radioactive site. Uranium has been found in the groundwaters. site Relatively low levels were found.			
ACTION TAKEN			
FINAL RESULTS			

SIGNATURE Ainto M. Schroeter	DATE 11/17/93
---------------------------------	------------------



MISSOURI DEPARTMENT OF NATURAL RESOURCES
TELEPHONE OR CONFERENCE RECORD

FILE <u>663874</u>		DATE <u>12/20/93</u>	
TELEPHONE <input checked="" type="checkbox"/> INCOMING <input type="checkbox"/> OUTGOING	CONFERENCE <input type="checkbox"/> FIELD <input type="checkbox"/> OFFICE		
SUBJECT <u>Receipt of their letter of December 16, 1993</u>			
PERSONS INVOLVED			
NAME <u>Pat Reeves</u>		REPRESENTATIVE <u>ADR</u>	
SUMMARY OF CONVERSATION <u>They have constructed some monitoring wells. The groundwater fluctuates by 10'. I believe it is because of a sand plant. In one of the monitoring wells there was free product. Marion Industries a current leases may assist in some of the clean up.</u> <u>If the letter is not received by 12/28 we should contact him.</u>			
ACTION TAKEN			
FINAL RESULTS			
SIGNATURE <u>Anto M. Schroeter</u>		DATE <u>12/20/93</u>	

INDUSTRIAL MINERAL APPLICATION REVIEW CHECKLIST

APPLICANT INFORMATION

Permit #: 0046 Permit Year: 99

Operation: WEST LAKE Quarry Inspector's Initials: WSZ

LOCATION FORM INFORMATION

Applicant Name: ✓

Phone No. ✓

Signed and Notarized? ✓

Date Reviewed: 12-11-98

Reviewer's Initials: WSZ

Applicant Address: ✓

Acres & Sites: 27 x 1

Date Received: 12-3-98

Date Review Completed: 12-11-98

FEES

Permit Fees N/A for Expansions, Amendments, Revisions during the permit year

Permit Fees (\$350 > 5,000 Tons/Yr.) 350

(\$100 ≤ 5,000 Tons/Yr.) 40

Site Fee (\$40 / site) X 1

Acres Fee (\$35 / new acre) 390

TOTAL 2022985 + 390 OK

SITE INFORMATION FORM

Acres: 27

Legal Description: 2829-33N 14E

River or Stream Name: N/A

Landowners: SAME AS OP

Right-to-mine: SAME AS OP

Minerals Rights Owner: SAME AS OP

In-Stream = N/A

MINE PLAN

Type of Plan (Short or Long): LONG

Site Description: GOOD

Topsoil: N/A

Soil Substitution (if necessary): 3-1-1 - moved soil area

Fill Materials: N/A

Pit Information: ✓

Seed Mix: MAP

Grading: GOOD

Sequence & Timing of Reclamation: GOOD

Average depth of replaced soil: 12"

Use of Land when Reclaimed: WATER OK

Total acreage covered by the MP: 12.5

Signed and Notarized? ✓

Open-pit = N/A

STREAM PROTECTION PLAN

Type of Plan (Short or Long): ✓

Site Description: ✓

Streambank Protection: ✓

Environment Protection: ✓

Water Quality Protection: ✓

Signed and Notarized? ✓

ENDANGERED SPECIES IN AREA?

PUBLIC NOTICE

DATE PUBLISHED: ✓

COMMENT PERIOD OVER (16TH DAY): ✓

PROOF OF PUBLICATION RECEIVED: ✓

Operator Name: ✓

Operator Address: ✓

Commodity: ✓

Acres: ✓

Legal Description: ✓

Stream Name (if in-stream operation): ✓

Period of Operation: ✓

Open to Comments: ✓

Commission Address: ✓

Comment Deadline: ✓

OK Aged IN PAST

Company Name <i>West Lake Qyd Material</i>				Address <i>12976 211 Charles Rock Rd Bridgeton MO 63044</i>											
Permit No. <i>46</i>		Expiration Date <i>12/31</i>		Operator <i>West Lake Qyd Material Co.</i>								Phone No. <i>314-239-1122</i>			
Location County S-T-R		19 90				19 91				19 92				Com- modity	Remarks
		N	R	B	P	N	R	B	P	N	R	B	P		
<i>Saline 34-53-20W</i>			<i>12</i>		<i>12</i>		<i>12</i>							<i>LS</i>	
<i>Saline 13-50W-19W</i>			<i>6</i>		<i>6</i>		<i>6</i>							<i>LS</i>	
<i>St. Louis 4-47W-SE</i>			<i>2</i>		<i>2</i>		<i>2</i>							<i>LS</i>	<i>#1</i>
<i>St. Louis 9-47W-2E</i>			<i>20</i>		<i>20</i>		<i>20</i>							<i>LS</i>	<i>#2 Transferred to Riverview (#2)</i>
<i>Jefferson 32-42W-6E</i>			<i>12</i>		<i>12</i>		<i>12</i>							<i>LS</i>	
<i>St. Genevieve 7/8-38W-9E</i>			<i>2</i>		<i>2</i>		<i>2</i>	<i>2</i>	<i>0</i>					<i>LS</i>	<i>Released 5/26/92</i>
<i>Cape Girardeau 28/29-33W-14E</i>			<i>27</i>		<i>27</i>		<i>27</i>	<i>1</i>						<i>LS</i>	
<i>Scott 27-30W-14E</i>			<i>27</i>		<i>27</i>	<i>3</i>	<i>27</i>							<i>LS</i>	<i>transferred to Tower Rock Mine #581 6/10/92</i>

LS = Limestone
 CL = Clay
 TS = Tar Sand
 Ba = Barite
 S&G = Sand & Gravel

N= New acres added this year
 R= Renewed acres from previous years
 B= Bond released acres this year
 P= Total permitted acres this year

[illegible]

UNDERGROUND STORAGE TANK UNIT FACILITY INFORMATION REPORT

FACILITY ID:

OWNER ID:

DATE REC.:	NAME AND ADDRESS	CONTACT AND PHONE:	CONTACT TITLE:	REGISTRATION FEE CYCLE
ST0013618	WEST LAKE QUARRY & MATERIAL CO	ROBERT COX	SAFETY ENG	10/01/1995 09/30/2003
OW10412	13570 ST CHARLES ROCK ROAD	(314)739-1122		
	BRIDGETON, MO 63044		LATITUDE: 38 46 39	
04/14/1986	ST LOUIS COUNTY COUNTY	REGION: SL	LONGITUDE: 90 27 3	

SIGNER: W.E. WHITAKER

TITLE: SAFETY ENG

DNR					TANK	DATE	DATE	Fees	MEET
TANK ID:	TANK TYPE:	STATUS:	CAPACITY:	SUBSTANCE:	MATERIAL:	INSTALLED:	CLOSED:	Paid	98:
1	BELOW	REMOVED	2,000	GASOLINE	STEEL	01/01/1982	/ /	0	NO
2	BELOW	REMOVED	10,000	GASOLINE	STEEL	01/01/1981	/ /	0	NO
3	BELOW	REMOVED	10,000	DIESEL	STEEL	01/01/1978	/ /	0	NO
4	BELOW	REMOVED	10,800	DIESEL	STEEL	01/01/1972	/ /	0	NO
5	BELOW	REMOVED	10,000	DIESEL	STEEL	01/01/1972	/ /	0	NO
6	BELOW	REMOVED	10,000	DIESEL	STEEL	01/01/1977	/ /	0	NO
7	BELOW	REMOVED	10,000	DIESEL	STEEL	01/01/1960	/ /	0	NO
8	BELOW	REMOVED	1,000	USED OIL	STEEL	01/01/1972	/ /	0	NO
9	BELOW	REMOVED	10,000	P.ASPHALT	STEEL	01/01/1962	05/18/1990	0	NO
10	BELOW	REMOVED	10,000	P.ASPHALT	STEEL	01/01/1962	05/18/1990	0	NO
11	BELOW	REMOVED	10,000	DIESEL	STEEL	01/01/1968	/ /	0	NO

03/22/1999

ust:facility

UNDERGROUND STORAGE TANK UNIT FACILITY INFORMATION REPORT

FACILITY ID:

OWNER ID:

DATE REC.:	NAME AND ADDRESS	CONTACT AND PHONE:	CONTACT TITLE:	REGISTRATION FEE CYCLE
ST0013618	WEST LAKE QUARRY & MATERIAL CO	ROBERT COX	SAFETY ENG	10/01/1995 09/30/2003
OW10412	13570 ST CHARLES ROCK ROAD	(314)739-1122		
	BRIDGETON, MO 63044		LATITUDE: 38 46 39	
04/14/1986	ST LOUIS COUNTY COUNTY	REGION: SL	LONGITUDE: 90 27 3	

SIGNER: W.E. WHITAKER

TITLE: SAFETY ENG

DNR					TANK	DATE	DATE	Fees	MEET
TANK ID:	TANK TYPE:	STATUS:	CAPACITY:	SUBSTANCE:	MATERIAL:	INSTALLED:	CLOSED:	Paid	98:
1	BELOW	REMOVED	2,000	GASOLINE	STEEL	/ /	/ /	0	NO
2	BELOW	REMOVED	10,000	GASOLINE	STEEL	/ /	/ /	0	NO
3	BELOW	REMOVED	10,000	DIESEL	STEEL	/ /	/ /	0	NO
4	BELOW	REMOVED	10,800	DIESEL	STEEL	/ /	/ /	0	NO
5	BELOW	REMOVED	10,000	DIESEL	STEEL	/ /	/ /	0	NO
6	BELOW	REMOVED	10,000	DIESEL	STEEL	/ /	/ /	0	NO
7	BELOW	REMOVED	10,000	DIESEL	STEEL	/ /	/ /	0	NO
8	BELOW	REMOVED	1,000		STEEL	/ /	/ /	0	NO
9	BELOW	REMOVED	10,000	P.ASPHALT	STEEL	/ /	05/17/1990	0	NO
10	BELOW	REMOVED	10,000	P.ASPHALT	STEEL	/ /	/ /	0	NO
11	BELOW	TEMP. OUT OF SERVICE	10,000	DIESEL	STEEL	/ /	/ /	0	NO

STATE OF MISSOURI Bob Holden, Governor • Stephen M. Mahfood, Director
DEPARTMENT OF NATURAL RESOURCES

www.dnr.state.mo.us

AUG 19 2002

Mr. Mark T. Simpson
Simpson Construction Materials, L.L.C.
P.O. Box 250 63088
Valley Park, MO 60388

RE: West Lake Quarry and Material, 13570 St. Charles Rock Road, Bridgeton,
 St. Louis County, MO - ST0013618, R0003874

Dear Mr. Simpson:


The Missouri Department of Natural Resources' Hazardous Waste Program, Tanks Section, has received and reviewed a status update for the above referenced file. The update letter indicates Simpson Construction Materials, L.L.C., has assumed responsibility to continue investigation and corrective action. The department is pleased to see this site moving forward. Please submit the groundwater monitoring and free product recovery report that was approved by the department as soon as possible.

Please direct questions regarding the Petroleum Storage Tank Insurance Fund to the Fund Administrator at (573) 761-4060 or (800) 765-2765.

If you have any questions regarding this letter, please contact the project manager for this facility, Mr. Terry Hawkins of the Hazardous Waste Program, P.O. Box 176, Jefferson City, MO 65102-0176, or at (573) 751-6822.

Sincerely,

HAZARDOUS WASTE PROGRAM


Frederick J. Hutson, R.G., Chief
Remediation Unit

FJH:thg

c: Mr. Bryan S. Ellege, Schreiber, Yonley & Associates
 Mr. David Pate, Petroleum Storage Tank Insurance Fund
 Mr. Mike Struckhoff, St. Louis Regional Office

Integrity and excellence in all we do



Terry Hawkins

08/26/2002 02:12 PM

To: Fred Hutson/HWP/DEQ/MODNR@MODNR

cc:

Subject: West Lake Quarry Site R0003874 ST0013618

Hi Fred,

I received the following email with new contact information for Simpson Construction Materials, LLC. As I understand Simpson has bought out the former owner and is agreeing to take over responsibility for cleanup.

----- Forwarded by Terry Hawkins/DGLS/MODNR on 08/26/2002 02:08 PM -----



"Bryan Elledge"

<BryanE@syaeng.com>
m>

To: nrhawkt@mail.dnr.state.mo.us

cc: "Ed Shepard" <eds@syaeng.com>

Subject: West Lake Quarry Site R0003874 ST0013618

08/26/2002 01:34 PM

Terry,

Could you please change the contact information for Simpson Construction Materials, LLC to the following:

P.O. Box 68
Valley Park, MO 63088

Thanks

Bryan S. Elledge, RG, PG
Environmental Scientist
Schreiber, Yonley & Associates
636-349-8399
636-349-8384 (fax)

CHECK LOG INFORMATION

ST 13614

OWNER ID: COMPANY NAME:

W10412 WEST LAKE COMPANIES

13615

13616

13618

CHECK #:	CHECK DATE:	AMOUNT:	REG. FUN:	INS. FUN:	COMMENTS:
10449	12/17/92	175.00	75.00	100.00	
10685	01/26/93	135.00	135.00	0.00	
11528	06/16/93	435.00	435.00	0.00	
11722	07/30/93	45.00	45.00	0.00	
18729	04/25/94	90.00	90.00	0.00	
19405	04/21/95	300.00	300.00	0.00	
7026	12/29/89	2900.00	0.00	2900.00	
4976	05/01/91	345.00	345.00	0.00	
8686	05/19/92	225.00	225.00	0.00	

UT0013614

UT0013614

UT0013614

UT0013614

UT0013616 PAID IN FULL

UT0013615 PAID IN CLOSURE

ALL FACILITIES

ALL FACILITIES

NumCaps
UNDERGROUND STORAGE TANK TRANSACTION LOG

Owner ID DW10412 Check # 11528		Chk date 06/16/93		Paymt # 7131	
Owner/Payor WEST LAKE COMPANIES		Amount \$		435.00	
Regulation \$	435.00	USTIF	0.00	Doc 'Serv'	0.00
Comments UT0013618 <i>pt in file gms</i>					
Exclude from printouts Y					

NumCaps
UNDERGROUND STORAGE TANK TRANSACTION LOG

Owner ID DW10412 Check # 11722		Chk date 07/30/93		Paymt # 7363	
Owner/Payor WEST LAKE COMPANIES		Amount \$		45.00	
Regulation \$	45.00	USTIF	0.00	Doc 'Serv'	0.00
Comments UT0013616					
Exclude from printouts Y					

NumCaps
UNDERGROUND STORAGE TANK TRANSACTION LOG

Owner ID DW10412 Check # 4976		Chk date 03/01/91		Paymt # 2524	
Owner/Payor WEST LAKE COMPANIES		Amount \$		345.00	
Regulation \$	345.00	USTIF	0.00	Doc 'Serv'	0.00
Comments ALL FACILITIES					
Exclude from printouts Y					





Mel Carnahan, Governor • Stephen M. Mahfood, Director

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL QUALITY

P.O. Box 176 Jefferson City, MO 65102-0176

Dear Tank Owner:

RE: Upgrade Requirements for Underground Storage Tanks

The purpose of this letter is to remind you of the upcoming December 22, 1998, Underground Storage Tank (UST) upgrade deadline. This deadline was established ten years ago and is now upon us. According to the department's records, your USTs do not meet the upgrade requirements. If our records are in error, please complete the enclosed registration form to correct our files.

If you have not yet met the upgrade requirements, we request that you inform us in writing that your tanks will be in compliance by the deadline, or that you will properly close your USTs by the deadline. A form for this purpose is enclosed for your convenience. This form should be returned to the attention of Missouri Department of Natural Resources, Hazardous Waste Program, Tanks Section, P.O. Box 176, Jefferson City, Missouri 65102.

For USTs to operate legally within the State of Missouri, they must have a current tank certificate. Any tank that does not meet the upgrade requirements may have their certificate rescinded after the deadline passes. Any regulated UST that is found to be in operation after December 22, 1998, and not meeting the upgrade requirements is also subject to civil penalties as provided in Section 319.127, RSMo. The department has the authority to assess a civil penalty not to exceed \$10,000 for each day a violation occurs.

The United States Environmental Protection Agency (EPA) will also be conducting tank inspections within the State of Missouri. The EPA has authority to issue citations for violations noted during inspections. The EPA also has authority to assess civil penalties up to \$25,000 per day per violation against owners and operators who continue to operate non-upgraded USTs after December 22, 1998.

We urge you to take immediate steps to comply with the tank upgrade requirements. If you need technical assistance in understanding the upgrade requirements, please contact the department's Technical Assistance Program at (800) 361-4827. If you have questions regarding your current registration, please contact the Tanks Section at (573) 751-6822.

Thank you for your attention to this important issue.

Sincerely,

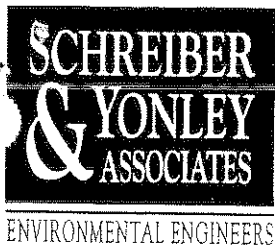
HAZARDOUS WASTE PROGRAM

A handwritten signature in cursive script, reading "Cindy Kemper", is written over the typed name.

Cindy Kemper
Director

Enclosures

c: Regional Office

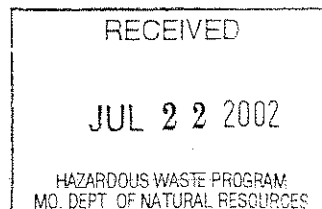


271 Wolfner Drive • Fenton, Missouri 63026
636/349-8399 • Fax 636/349-8384



July 19, 2002

Mr. Terry Hawkins
Missouri Department of Natural Resources
Hazardous Waste Program
Tanks Section
P.O. Box 176
Jefferson City, MO 65102-0176



RE: West Lake Quarry & Landfill
13570 St. Charles Rock Road
Bridgeton, Missouri
Facility ST0013618
LUST R0003874

Dear Mr. Hawkins:

On behalf of Simpson Construction Materials, LLC (Simpson), Schreiber, Yonley & Associates (SYA) is pleased to provide this status update for the above-referenced site. Maryon Industries, Inc. formerly operated a portion of the site as an asphalt batch plant. On July 16, 2002, the facility and operations of the plant were transferred to Simpson Construction Materials, LLC, and they have assumed the responsibility to continue the investigation and corrective action activities associated with the site.

Communication with Mr. John Stone of the Missouri Petroleum Storage Tank Insurance Fund (MPSTIF) on June 27, 2002 indicated the site is eligible for reimbursement. A free product recovery and groundwater monitoring workplan and budget was submitted for the site in 1999. The technical scope of the workplan was approved by the MDNR in correspondence dated October 12, 1999. The MPSTIF approved the budget in correspondence dated December 15, 1999. The activities approved in the workplan will now be performed under the direction of Simpson, contingent on reaffirmation of the technical approval by MDNR and budget approval by MPSTIF.

As part of the assets transfer from Maryon to Simpson, a Phase II Baseline Assessment was performed in June 2002. The results of the assessment indicated free product on the groundwater surface in monitoring well MW-1A and concentrations of dissolved-phase petroleum hydrocarbons above MDNR cleanup levels for non-potable water in the groundwater samples obtained from monitoring wells MW-4A and MW-5A. Concentrations of dissolved benzene,

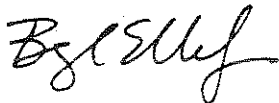
COPY

toluene, ethylbenzene, and total xylenes (BTEX) and methyl-tertiary-butyl ether (MTBE) constituents were below the MDNR cleanup levels in the groundwater samples obtained from monitoring wells MW-2A, MW-3A, MW-4A, and MW-5A. Approximately five gallons of free product and 25 gallons of purge water were recovered from the monitoring wells and stored on-site for later disposal.

If you have any questions concerning this submittal, please do not hesitate to contact our office.

Sincerely,

SCHREIBER, YONLEY & ASSOCIATES

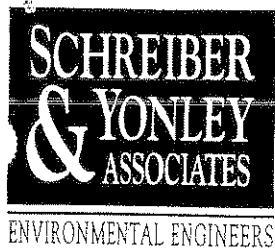


Bryan S. Elledge, R.G., P.G.
Environmental Scientist

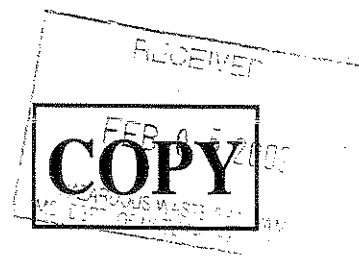
BSE:bah

cc: Mr. Mark Simpson, Simpson Construction Materials LLC
Mr. John Stone, MPSTIF

x:\simpso\020100\correspondence\MDNR and MPSTIF letter.doc



271 Wolfner Drive • Fenton, Missouri 63026
636/349-8399 • Fax 636/349-8384



January 25, 2002

Mr. Terry Hawkins
Missouri Department of Natural Resources
Tanks Section
1738 East Elm
Jefferson City, MO 65101

RE: West Lake Quarry & Material
13570 St. Charles Rock Road
Bridgeton, Missouri
ST0013618, R0003874

Dear Mr. Murrell:

Schreiber, Yonley & Associates, on behalf of Maryon Industries, Inc. (Maryon), is submitting this correspondence in response to the letter of warning sent to Maryon Industries, Inc. dated September 5, 2001.

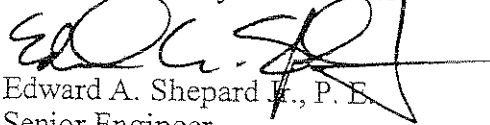
The letter of warning inquired about the progress of the implementation of the workplan for free product recovery. The workplan, dated September 24, 1999, was approved by the Missouri Department of Natural Resources. The workplan includes the installation and monitoring of a free product recovery pump in one monitoring well and the quarterly groundwater monitoring of five on-site monitoring wells. Recent monitoring well fluid measurements are included with this letter.

Maryon is currently in the process of acquiring the free product recovery pump. It is estimated that the pump should be in place and operating within thirty days, with the first of the monthly free product recovery reports to be submitted within sixty days. The quarterly groundwater monitoring of the five monitoring wells will also proceed within this time period.

If you have any questions please call me at (636) 349-8399.

Sincerely,

Schreiber Yonley & Associates


Edward A. Shepard, P. E.
Senior Engineer

EAS:bah

Attachment

cc: Mr. Mike Jones – Maryon Industries, Inc.

x:\MIA\010181\correspondence\response\letter

Water and Product Measurements

Monitoring Well	Static Water Level	Product Level	Product Thickness
MW-1A	35.95'	33.71'	2.22'
MW-2A	32.80'	ND	NA
MW-3A	32.89'	ND	NA
MW-4A	30.95'	ND	NA
MW-5A	31.37'	ND	NA

-
- Wells gauged on 10/03/01
 - ND = Not Detected
 - NA = Not Applicable

57126-1
R58794

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

Bob Holden

~~XXXXXXXXXX~~ Governor • Stephen M. Mahfood, Director

COPY

FEB 7 2001

Mr. Vince Jones
Maryon Industries
13570 St. Charles Rock Road
Bridgeton, MO 63044

RE: West Lake Quarry and Material, 13570 St. Charles Rock Road, Bridgeton, MO
ST0013618, R0003874

Dear Mr. Jones:

The Missouri Department of Natural Resources' Hazardous Waste Program, Tanks Section, has reviewed the above referenced facility file. The file contains a letter requesting additional information (copy enclosed). To date, the department has not received any response to this request. Please submit this documentation within 30 days of receipt of this letter.

The department looks forward to the receipt of the above documentation.

Please direct questions regarding the Petroleum Storage Tank Insurance Fund to the Fund Administrator at (573) 761-4060 or (800) 765-2765.

Thank you for your cooperation in our efforts to protect Missouri's environment, as together we address contamination at this site. If you have any questions regarding this letter, you may contact me at (573) 751-6822.

Sincerely,

HAZARDOUS WASTE PROGRAM



Jim Growney, Chief
Remediation Unit

JG:hrl

Enclosure

c: Mr. David Pate, Petroleum Storage Tank Insurance Fund
Mr. Mike Struckhoff, St. Louis Regional Office

JLR STONE INCORPORATED

600 NE QUARRY RD.
JACKSON, MO 63755-6808
PH. 812-937-4380

02/16/01

SPENCER COUNTY BANK

71-800/813

184

PAY **** THREE HUNDRED NINETY & 0/100 DOLLARS

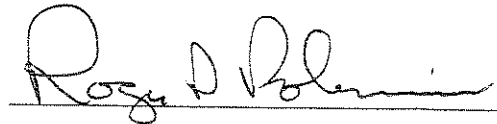
TO THE
ORDER OF

DATE
2/6/01

AMOUNT
\$*****390.00

MO DEPARTMENT OF NATURAL RESOURCES

AUTHORIZED SIGNATURE



⑈0000184⑈ ⑆081308006⑆ ⑈11079037⑈

JLR STONE INCORPORATED
600 NE QUARRY RD., JACKSON, MO 63755-6808

184

Vendor ID : MO3

Name : MO DEPARTMENT OF NATURAL RESOURCES

Check Date : 2/6/01

Check Amount : 390.00

MEMO:

PERMIT FEE

RECEIVED

FEB 16 2001

LAND RECLAMATION COMMISSION

STATE OF MISSOURI

P.O. BOX 176
JEFFERSON CITY, MISSOURI 65102
573-751-4041

Permit To Engage in Surface Mining

LAND RECLAMATION COMMISSION

ISSUES TO

WESTLAKE QUARRY & MATERIAL COMPANY

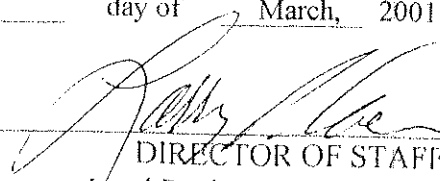
Pursuant to "The Land Reclamation Act," RSMo, 1994, and on conformity with the statements
In the application, a permit is hereby granted to engage in surface mining of
limestone in the state of Missouri. The extent of the
Proposed mining operation(s) will be on 27 acres, more or less.

The locations of the operation(s) under this permit is/are as follows: **Renewal**

County	Section	Township	Range	Acres Renewed	Acres New	Total Acres	Site/Stream Name	Site Number
Cape Girardeau	28,29	33N	14E	27		27	Neely's Landing	0071

This permit may be suspended or revoked upon violation of any or all of the conditions set
forth in "The Land Reclamation Act," RSMo. 1994, or in such rules and regulations
as are promulgated pursuant thereto by the Land Reclamation Commission.

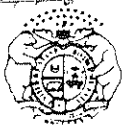
IN WITNESS WHEREOF I have hereunto set my hand this 21st day of March, 2001


DIRECTOR OF STAFF
Land Reclamation Commission

Permit No. 0046

Effective Date 03/21/2001

Expiration Date 12/31/2001



MISSOURI DEPARTMENT OF NATURAL RESOURCES
LAND RECLAMATION COMMISSION

PERMIT APPLICATION FOR INDUSTRIAL MINERAL MINES

MAR 1 - 2001

MISSOURI LAND RECLAMATION COMMISSION
P.O. BOX 176
JEFFERSON CITY, MO 65102

NAME OF CORPORATION, COMPANY, PARTNERSHIP OR INDIVIDUAL <u>West Lake Quarry and Material Company</u>		DATE <u>March 12, 2001</u>	
ADDRESS <u>P.O. Box 434</u>	CITY <u>O'Fallon</u>	STATE <u>MO</u>	ZIP CODE <u>63366</u>
CONTACT PERSON <u>W.E. Whitaker</u>		TELEPHONE NUMBER <u>(636) 379-5913</u>	

Check any that apply:

☐ New Permit ☒ Permit Renewal ☐ Permit Amendment ☐ Permit Revision ☐ Permit Expansion

SITE NAME OR NUMBER	ACRES TO BE PERMITTED		TOTAL ACRES FOR ALL SITES
	INSTREAM	ALL OTHER	
<u>Neely's Landing</u>		<u>27</u>	<u>27</u>

<p>Fees - Complete <u>A</u> or <u>B</u></p> <p>A - For sand and gravel operators mining less than 5,000 tons/year Permit Fee \$100.00 Number of new acres X \$35.00/acre \$</p> <p>B - For <u>ALL</u> other operations Permit Fee \$350.00 Number of sites <u>1</u> X \$40.00/site \$ <u>40.00</u> Number of new acres X \$35.00/acre \$</p> <p>Total fees \$ <u>390.00</u></p>	<p>Bonding for all acreage EXCEPT instream - Complete <u>A</u> or <u>B</u></p> <p>A - For sand and gravel operators mining less than 5,000 tons/year Number of new acres X \$500.00/acre \$</p> <p>B - For <u>ALL</u> other open pit operations Minimum per permit \$ 8,000.00 Acreage over 8 acres <u>19</u> X \$500.00/acre \$ <u>9,500.00</u> Number of new acres where topsoil will be sold or discarded X \$4,500.00/acre \$ <u>NA</u> Total bonding required \$ <u>17,500.00</u></p> <p><input type="checkbox"/> Check here if adequate bonding is already posted.</p>
---	--

L. all other Land Reclamation Commission permits previously or currently held by applicant or by companies owned or partially controlled by applicant. If none, write "none" below.

NAME OF COMPANY	PERMIT NUMBER	MINERAL COMMODITY	YEARS
<u>NONE</u>			

For any of the above which have been served Cessation of Operations or Bond Forfeiture, or have unabated Notices of Violation, please give:

PERMIT NUMBER	TYPE OF ACTION

I certify that all statements made on this application are correct, complete, and true, to the best of my knowledge.

SIGNATURE OF APPLICANT 	TITLE <u>President</u>	DATE <u>March 12, 2001</u>
Appeared before me this <u>12th</u> day of <u>March</u> , <u>2001</u> , to me personally known, who executed the above as their free acts and deeds.		

NOTARY PUBLIC EMBOSSEMENT SEAL 	STATE <u>Missouri</u>	COUNTY (OR CITY OF ST. LOUIS)
	SUBSCRIBED AND SWORN BEFORE ME, THIS <u>12th</u> DAY OF <u>March</u> , <u>2001</u>	<u>St. Charles</u>

NOTARY PUBLIC SIGNATURE 	MY COMMISSION EXPIRES <u>12/6/01</u>	USE RUBBER STAMP IN CLEAR AREA BELOW
BEVERLY SOWERS, NOTARY PUBLIC St. Charles County, State of Missouri My Commission Expires Dec. 15, 2001		

APPROVED BY DIRECTOR OR REPRESENTATIVE 	DATE APPROVED <u>3-21-01</u>	PERMIT NUMBER <u>0046</u>	EXPIRATION DATE <u>12-31-01</u>
--	---------------------------------	------------------------------	------------------------------------

MO 780-6001 (2-94) ATTACH SITE INFORMATION FORM(S), MINE PLAN FORM(S), PROOF OF PUBLIC NOTICE, AND CONSENT OF ENTRY FORM (IF NEEDED)

INDUSTRIAL MINERAL APPLICATION REVIEW CHECKLIST
APPLICANT INFORMATION Permit #: 0096 Permit Year: 2001
Operation: West Lake Quarry Inspector's Initials TT

APPLICATION FORM INFORMATION

Applicant Name _____
Phone No. _____
Signed and Notarized? ✓
Date Reviewed 3-19-01
Reviewer's Initials TT
Applicant Address _____
Acres & Sites ✓
Date Received Various
Date Review Completed _____

FEES Renewal

Permit Fees N/A for Expansions, Amendments, Revisions during the permit year.
Permit Fees (\$350 > 5,000 Tons/Yr.) 3150
(\$100 ≤ 5,000 Tons/Yr.) _____
Site Fee (\$40 / site) 40
Acreage Fees (\$35 / new acre) _____
TOTAL = 3190
≤ 5,000 Tons/Yr = N/A
Renewal = N/A

SITE INFORMATION FORM

Acreage _____
Legal Description _____
River or Stream Name _____
Landowners _____
Right-to-mine _____
Minerals Rights Owner _____

Open-pit = N/A

MINE PLAN

Type of Plan (Short or Long) _____
Site Description _____
Topsoil _____
Soil Substitution (if necessary) _____
Spoil _____
Acid Materials _____
Pit Information _____
ed Mix _____
ading _____
Sequence & Timing of Reclamation _____
Average depth of replaced soil _____
Use of Land when Reclaimed _____
Total acreage covered by the MP _____
Signed and Notarized? _____

In-Stream = N/A

Needs to be better
for transfer

STREAM PROTECTION PLAN

Type of Plan (Short or Long) _____
Site Description _____
Streambank Protection _____
Environment Protection _____
Water Quality Protection _____
Signed and Notarized? _____

Open-pit = N/A

ENDANGERED SPECIES IN AREA ?

PUBLIC NOTICE

DATE PUBLISHED _____
COMMENT PERIOD OVER (16TH DAY) _____
PROOF OF PUBLICATION RECEIVED _____

Operator Name _____
Operator Address _____
Commodity _____
Acreage _____
Legal Description _____
Stream Name (if in-stream operation) _____
Period of Operation _____
O to Comments _____
C lission Address _____
Comment Deadline _____

No PN for
Neely's Landings
* in process of transfer *

LUST INFORMATION REPORT

UST ID:LU03874

AC ID:ST0013618

REGION: SL

FAC NAME:WEST LAKE QUARRY & MATERIAL CO
ADDRESS:13570 ST CHARLES ROCK RD
BRIDGETON, MO 63044

FAC CONTACT:ROBERT COX
CONTACT PHONE:(314) 739-1122
COUNTY:ST LOUIS COUNTY

OWN NAME:WEST LAKE QUARRY & MATERIAL CO
ADDRESS:12976 ST CHARLES ROCK ROAD
BRIDGETON, MO 63044

CONTACT PHONE:(314) 426-3091

RANKING: 0 SITE CODE: 8660

GRANT CODE:4765944

SPILL #:04223-kt-1612

EER RESPONSE

START DATE:

END DATE:

SITE ACTIVE: YES

RELEASE TYPE: UNDERGROUND

SITE TYPE: RP LEAD, HOUSE
BILL

INVEST.

START DATE: 04/10/1993

END DATE: 03/23/1998

RP CLEANUP

START DATE: 04/10/1993

END DATE:

FUND CLEANUP

START DATE:

END DATE:

DISCOVERY DATE: 04/22/1993

CONTRACT

TYPE: NOT REPORTED

REMEDIATION

TECH: EXCAVATION, FREE PRODUCT RECOVER, SI, TANK CLOSURE

PROJ. MAN.: HUGH MURRELL

CONTRACTOR: SCHREIBER, GRANA & YONLEY

AFFECTED

MEDIA: SOIL, GR. WATER

FREE PRODUCT RECOVERY:

START DATE: 10/31/1994

END DATE: 03/23/1998

LAST REPORT: 04/22/1998

CUMALTIVE

PROD. TOTAL: 13.0

REFERED TO
ENFORCEMENT: YES

DATE SENT:

REFERED TO
ENFORCEMENT: YES

DATE SENT:

COST RECOVERY
BEGAN:
COST RECOVERY
ENDED:

SITE ON
ESP LIST: NO

START DATE:

END DATE:

REFERED
TO DGLS: NO

DATE SENT:

RETURNED:

NEXT UPDATE:11/01/1999

COMMENTS: 6/29/95 SJ REQUESTED CAP RELEVANT TO EXISTING ON-SITE SOIL AND GROUNDWATER CONTAMINATION. 5/20/98 MJK Requested work plan for monitoring and CAP to address product problem. 11/4/98.HM: Approved Gw work plan. requested work plan to defin. GW contam. east of MW-4A and ggressive work plan for product recovery from MW-1. 3/11/99 HRM letter faxed from Stolar. Closure rpt on mail log in file drawer never found. Convers. with RP states last UST was taken out a while ago. 6/28/99 HRM Reviewed GWM rpt. Levels still high, FP still in MW-1. Requested CAP for FPR from MW-1 orginally requested in May of '98. 8/20/99 HRM Granted request for 30 day extension for submittal of CAP. 10/4/99 HRM Reviewed workplan for FPR. Approved plan.

5173618
R 3874

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Bob Holden, Governor • Stephen M. Mahfood, Director

COPY

DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

SEP - 5 2001

CERTIFIED MAIL - 7099 3220 0009 3709 8558
RETURN RECEIPT REQUESTED

Mr. Vince Jones
Maryon Industries
13570 St. Charles Rock Road
Bridgeton, MO 63044

RE: West Lake Quarry and Material, 13570 St. Charles Rock Road, Bridgeton, MO
ST0013618, R0003874

LETTER OF WARNING

Dear Mr. Jones:

The Missouri Department of Natural Resources' Hazardous Waste Program, Tanks Section, has reviewed the above referenced facility file. The file contains a February 7, 2001, letter requesting an update on the proposed free product recovery and quarterly groundwater monitoring that was approved by the department on October 12, 1999 (enclosed). To date, the department has not received any documentation that the work has been preformed.


This constitutes the first letter of warning for failure to cooperate with the department for requests for documentation in accordance with 10 CSR 20-10.034 and 10 CSR 20-10.066, failure to implement the approved corrective action plan.

Please direct questions regarding the Petroleum Storage Tank Insurance Fund to the Fund Administrator at (573) 761-4060 or (800) 765-2765.

If you have any questions regarding this letter, you may contact Mr. Terry Hawkins of my staff at (573) 751-6822.

Sincerely,

HAZARDOUS WASTE PROGRAM


Jim Growney, Chief
Remediation Unit

JG:thm

Enclosures

c: Mr. David Pate, Petroleum Storage Tank Insurance Fund
Mr. Edward A. Shepard, Schreiber Yonley & Associates
Mr. Mike Struckhoff, St. Louis Regional Office



WEST LAKE QUARRY AND MATERIAL COMPANY

P.O. BOX 434
O'FALLON, MO 63366-0434

(636) 379-5913

FIRSTAR BANK N.A.
Bank Without Boundaries

4-21/810

24535

11/13/2001

PAY TO THE
ORDER OF

State of Missouri

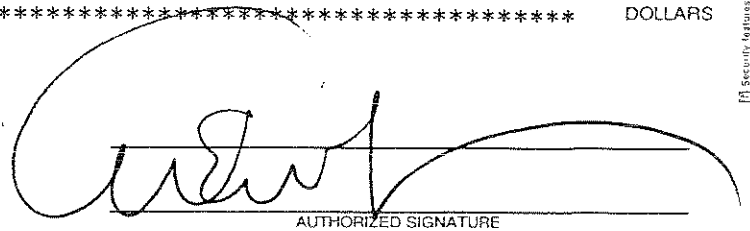
\$*390.00

Three Hundred Ninety and 00/100***** DOLLARS

State of Missouri
P.O. Box 176
Jefferson City, MO 65102-0176

MEMO

Renew Mining Permit Neely's Quarry


AUTHORIZED SIGNATURE

⑈024535⑈ ⑆081000210⑆ 1999127440⑈

RECEIVED
NOV 14 2001
MISSOURI LAND
RECLAMATION COMMISSIO

LAND RECLAMATION COMMISSION

STATE OF MISSOURI

P.O. BOX 176

JEFFERSON CITY, MISSOURI 65102

573-751-4041

Permit to Engage in Surface Mining

LAND RECLAMATION COMMISSION

ISSUES TO

WESTLAKE QUARRY & MATERIAL COMPANY

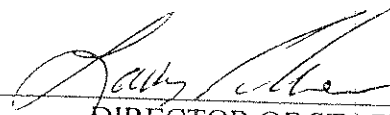
Pursuant to "The Land Reclamation Act," RSMo, 1994, and on conformity with the statements in the application, a permit is hereby granted to engage in surface mining of limestone in the state of Missouri. The extent of the proposed mining operation(s) will be on 27 acres, more or less.

The locations of the operation(s) under this permit is/are as follows: Renewal

County	Section	Township	Range	Acres Renewed	Acres New	Total Acres	Site/Stream Name	Site Number
Cape Girardeau	28, 29	33N	14E	27		27	Neely's Landing	0071

This permit may be suspended or revoked upon violation of any or all of the conditions set forth in "The Land Reclamation Act," RSMo. 1994, or in such rules and regulations as are promulgated pursuant thereto by the Land Reclamation Commission.

IN WITNESS WHEREOF I have hereunto set my hand this 28th day of November, 2001



DIRECTOR OF STAFF
Land Reclamation Commission

Permit No. 0046
Effective Date 01/01/2002
Expiration Date 12/31/2002

MO 780-1122 (6-95)

ST #

13618

R#

3874

LUST SITE PRIORITY RANKING/SCORING WORKSHEET

SCORING CRITERIA		TRUE	FALSE	UNKNOWN	ENTER SCORE
1	Vapors present in buildings or utilities	14	0	7	0
2	Drinking water supply impacted	14	0	7	0
3	Free product in Environment	12	0	6	12
4	Benzene Contamination	9	0	5	0
5	MTBE Contamination	9	0	5	0
6	Groundwater contamination	8	0	4	8
7	Product in Tank	8	0	4	0
8	Off-site impacts (known or observed)	8	0	4	0
9	Bedrock encountered	6	0	3	0
10	Proximity to sensitive features, man-made or natural horizontal or vertical conduits.	6	0	3	0
11	Surface water contamination	4	0	2	0
12	Soil contamination	2	0	1	2
Total Points Possible for site		100	0	51	
TOTAL SCORE					22
Is there a viable responsible party?		(yes)	no	unknown	
Is the site abandoned or uncontrolled?		yes	(no)	unknown	

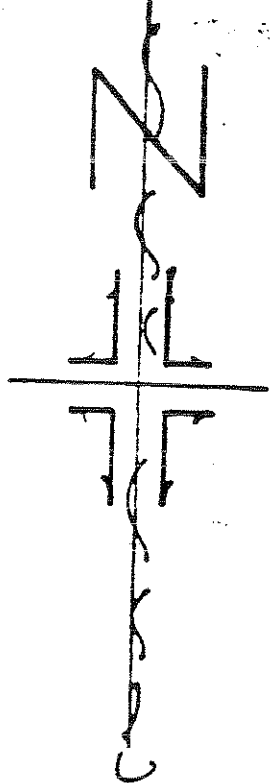
Comments:

Date completed:

20 JAN 01

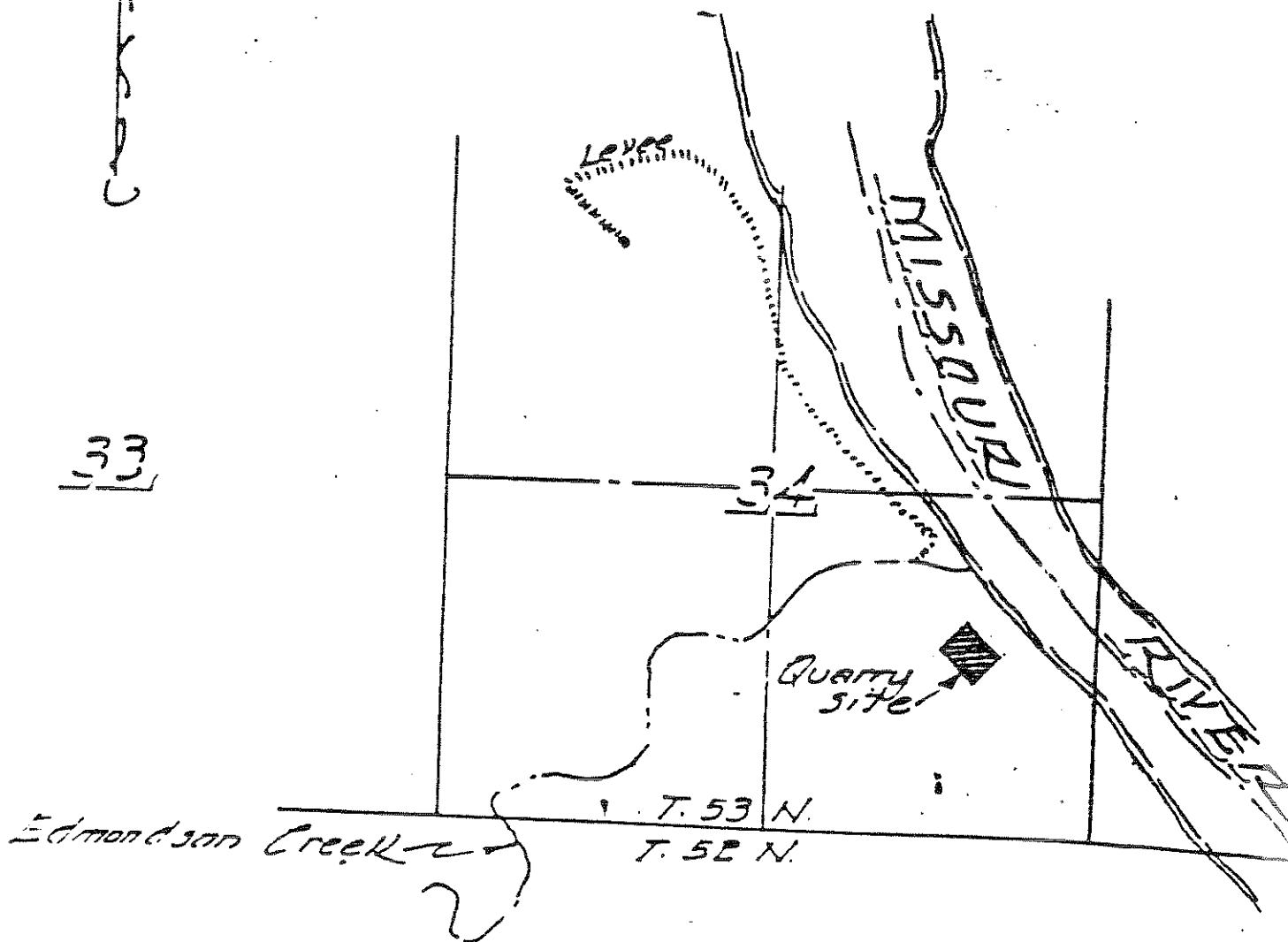
Rater's Signature:

Hugh Murrell

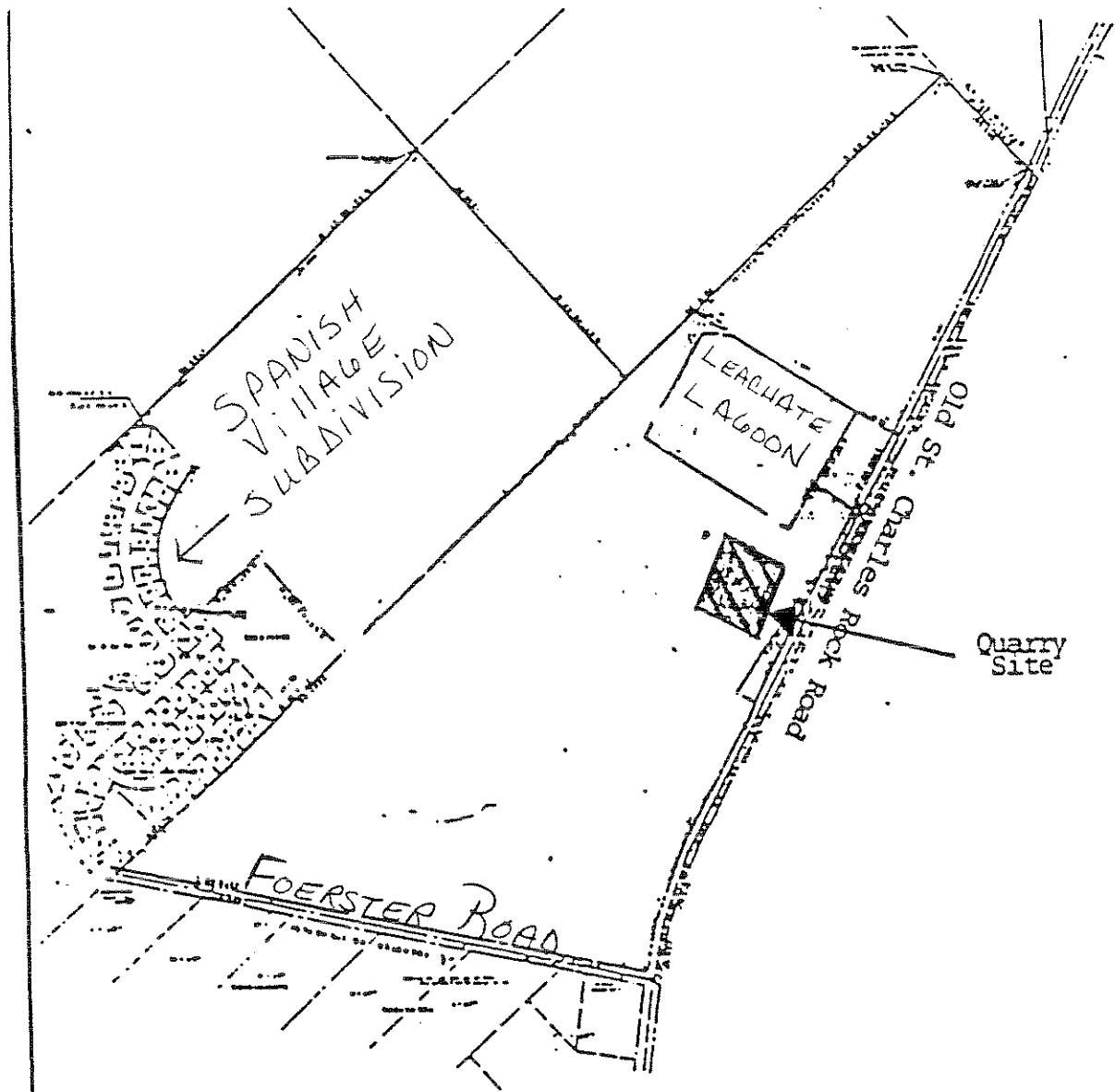


Franklin Quarry

Section 34
Township 53N
Range 20W



LOCATION MAP



PLANT #1

Section 4
Township 47N
Range 5E

RECEIVED

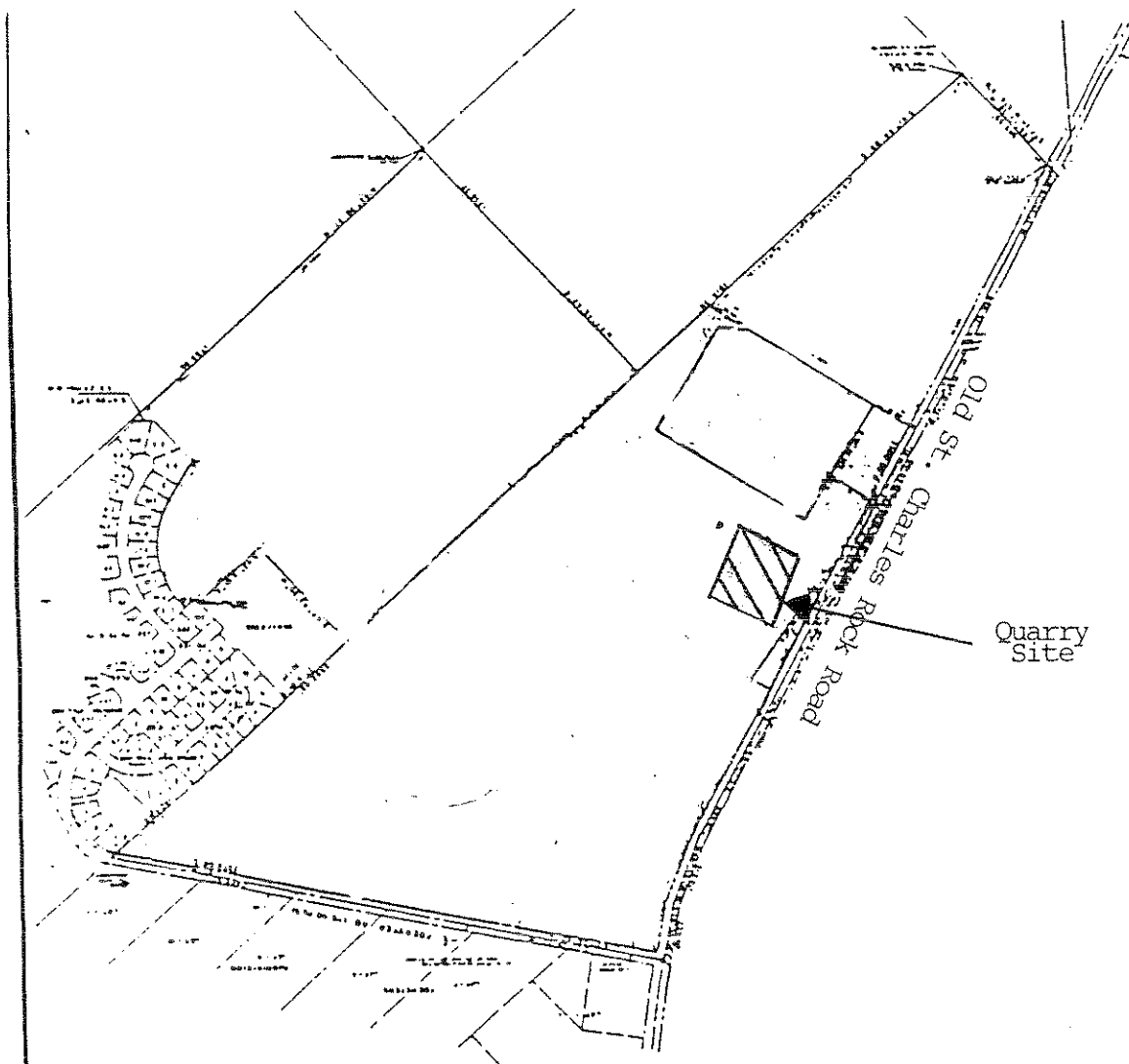
MAY 16 1993

MISSOURI AND
RECLAMATION COMMISSION

RECEIVED

DEC 23 1992

MISSOURI AND



PLANT #1

Section 4
Township 47N
Range 5E

N

SALINE CITY
1 MILE

12

26.92

14

ARROW ROCK QUARRY

Section 13
Township 50N
Range 19W

Quarry

Saline Co.
Howard Co.

MISSOURI
RIVER

Branch
Creek

24

LOCATION MAP



MISSOURI DEPARTMENT OF NATURAL RESOURCES
LAND RECLAMATION COMMISSION

PERMIT APPLICATION FOR INDUSTRIAL MINERAL MINES

RECEIVED
FEB 4 2000
MISSOURI LAND
RECLAMATION COMMISSION

P.O. BOX 176
JEFFERSON CITY, MO 65102

NAME OF CORPORATION, COMPANY, PARTNERSHIP OR INDIVIDUAL West Lake Quarry and Material Company		DATE February 2, 2000	
ADDRESS 1515 N. Warson Road, Suite 253	CITY St. Louis	STATE MO	ZIP CODE 63132
CONTACT PERSON W.E. Whitaker		TELEPHONE NUMBER (314) 426-3091	
Check any that apply: <input type="checkbox"/> New Permit <input checked="" type="checkbox"/> Permit Renewal <input type="checkbox"/> Permit Amendment <input type="checkbox"/> Permit Revision <input type="checkbox"/> Permit Expansion			

SITE NAME OR NUMBER	ACRES TO BE PERMITTED		TOTAL ACRES FOR ALL SITES
	INSTREAM	ALL OTHER	
Neely's Landing		27	27

Fees - Complete A or B A - For sand and gravel operators mining less than 5,000 tons/year Permit Fee \$100.00 Number of new acres X \$35.00/acre \$ B - For ALL other operations Permit Fee \$350.00 Number of sites <u>1</u> X \$40.00/site \$ <u>40.00</u> Number of new acres X \$35.00/acre \$ Total fees \$ <u>390.00</u>	Bonding for all acreage EXCEPT instream - Complete A or B A - For sand and gravel operators mining less than 5,000 tons/year Number of new acres X \$500.00/acre \$ B - For ALL other open pit operations Minimum per permit \$ 8,000.00 Acreage over 8 acres <u>19</u> X \$500.00/acre \$ <u>9,500.00</u> Number of new acres where topsoil will be sold or discarded X \$4,500.00/acre \$ <u>NA</u> Total bonding required \$ <u>17,500.00</u> <input checked="" type="checkbox"/> Check here if adequate bonding is already posted.
---	--

List all other Land Reclamation Commission permits previously or currently held by applicant or by companies owned or partially controlled by applicant. If none, write "none" below.

NAME OF COMPANY	PERMIT NUMBER	MINERAL COMMODITY	YEARS
NONE			

For any of the above which have been served Cessation of Operations or Bond Forfeiture, or have unabated Notices of Violation, please give:

PERMIT NUMBER	TYPE OF ACTION

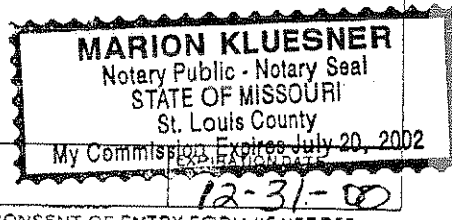
I certify that all statements made on this application are correct, complete, and true.

SIGNATURE OF APPLICANT: W.E. Whitaker TITLE: President DATE: February 2, 2000

Appeared before me this 2nd day of February personally known, who executed the above as their free acts and deeds.

NOTARY PUBLIC EMBOSSEER SEAL	STATE Missouri	COUNTY (OR CITY OF ST. LOUIS) St. Louis
	SUBSCRIBED AND SWORN BEFORE ME, THIS <u>2nd</u> DAY OF <u>February</u> 2000	
	NOTARY PUBLIC SIGNATURE <u>Marion Kluesner</u>	MY COMMISSION EXPIRES <u>7-20-2002</u>
	NOTARY PUBLIC NAME (TYPED OR PRINTED) MARION KLUESNER	

APPROVED BY (DIRECTOR'S REPRESENTATIVE) <u>[Signature]</u>	DATE APPROVED <u>2-22-00</u>	PERMIT NUMBER <u>0046</u>
---	---------------------------------	------------------------------





WEST LAKE QUARRY AND MATERIAL COMPANY
1515 N. WARSON RD. • SUITE 253
ST. LOUIS, MISSOURI 63132
(314) 426-3091

MERCANTILE BANK N.A.
721 Locust Street
St. Louis, MO 63101
4-21(0)/0810

02/09/00

24160

2/2/2000

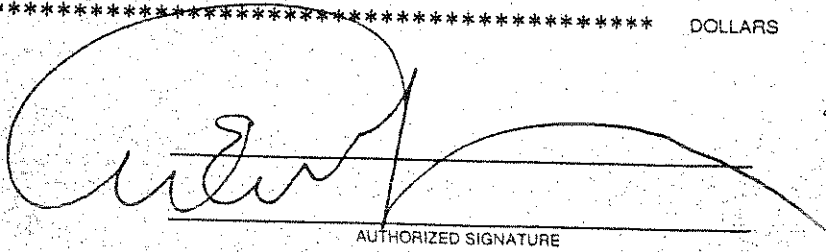
PAY TO THE
ORDER OF

State of Missouri

\$**390.00

Three Hundred Ninety and 00/100***** DOLLARS

State of Missouri
P.O. Box 176
Jefferson City, MO 65102-0176


AUTHORIZED SIGNATURE

MEMO

Renew Mining Permit Neely's Quarry

⑈024160⑈ ⑈081000210⑈ 1999127440⑈

ST LAKE QUARRY AND MATERIAL COMPANY 1515 N. WARSON RD., ST. LOUIS, MO 63132

24160

State of Missouri
5300 • General & Admin:5301 • gener

2/2/2000

390.00

RECEIVED
FEB 4 2000

MISSOURI LAND
RECLAMATION COMMISSION

Cash-Mercantile

Renew Mining Permit Neely's Quarry

390.00

INDUSTRIAL MINERAL APPLICATION REVIEW CHECKLIST

Page. 2

MINE PLAN

Type of Plan (Short or Long)
 Site Description
 Topsoil
 Soil Substitution (if necessary)
 Spoil
 Acid Materials
 Pit Information
 Seed Mix
 Grading
 Sequence & Timing of Reclamation
 Average depth of replaced soil
 Use of Land when Reclaimed
 Signed and Notarized ?

12
27

In-Stream = N/A

STREAM PROTECTION PLAN

Type of Plan (Short or Long)
 Site Description
 Streambank Protection
 Environment Protection
 Water Quality Protection
 Signed and Notarized ?

Open-pit = N/A

ENDANGERED SPECIES IN AREA ?

PUBLIC NOTICE

DATE PUBLISHED
 COMMENT PERIOD OVER (16TH DAY)
 PROOF OF PUBLICATION RECEIVED

Operator Name
 Operator Address
 Commodity
 Acreage
 Legal Description
 Stream Name (if in-stream operation)
 Period of Operation
 Open to Comments
 Commission Address
 Comment Deadline

← NO
 PUBLIC NOTICE
 FOR W. LAKE
 NEELY'S CANYON

CONSENT TO ENTRY

MAPS (Locator and Detail: 2 copies of each)

Legal Description
 Permit Boundary and Acreage
 Long Term Mine Plan Boundary
 and Acreage
 Stream and Road Names
 Date of Preparation
 Name of Preparer
 Detail Map Scale ≥ 1"=660'

Short Term = N/A

ACREAGE TRACKING SHEET UPDATED???

(No?, well then you're not done, are you?!!!)

04/2006



57-73618
R-3874

WILLIAMS & COMPANY CONSULTING, INC.

THIRD PARTY ADMINISTRATOR

COPY

December 15, 1999

RECEIVED

DEC 16 1999

Mr. Vince Jones
Maryon Industries
13570 St. Charles Rock Road
Bridgeton, MO 63044

HAZARDOUS WASTE PROGRAM
MISSOURI DEPARTMENT OF
NATURAL RESOURCES

RE: West Lake Quarry and Material, 13570 St. Charles Rock Road, Bridgeton, MO
ST0013618, Claim 50554

Dear Mr. Jones:

We have reviewed the cost proposal dated September 24, 1999, submitted on your behalf by Schreiber, Yonley & Associates, requesting authorization for installation of a free product recovery pump, free product recovery activities, and quarterly groundwater monitoring for a period of one year. Based on information available at this time, it has been determined that the site is eligible to receive benefits from the Petroleum Storage Tank Insurance Fund (PSTIF). The PSTIF reserves the right to deny all or part of the costs based upon our investigation of this project.

Please carefully review the PSTIF Claim Kit for guidance on the claim process. Page 12 of the Claim Kit specifically references claims involving corrective action. It is your responsibility to understand what you must do to document your claim. The Claim Kit and the PSTIF regulations are available on the Internet at www.pstif.org or call this office for a free copy if you do not have one.

The costs proposed by Schreiber, Yonley & Associates are reasonable. With this letter, we are authorizing the following:

- Task one, free product recovery (including free product purchase and installation), total costs **not to exceed \$11,600.00.**
- Task two, free product recovery monitoring, total costs **not to exceed \$5,900.00.**
- Task three, quarterly groundwater monitoring, total costs for four monitoring events **not to exceed \$8,080.00.**

This results in a combined total project authorization of **\$25,580.00** for the referenced activities. Please note that reimbursement for drilling and laboratory analytical costs will be based upon actual subcontractor invoices. No mark up by your environmental consultant will be recognized. Please note that we expect your environmental consultant to use the most cost effective means available for handling and disposal of fluids generated by these activities. Please coordinate all fluid related activities with John Stone of our office before proceeding. If additional work is required, please contact us before proceeding.

Petroleum Storage Tank Insurance Fund

P.O. BOX 104116 • JEFFERSON CITY, MO 65110-4116 • PHONE (800) 765-2765 • FAX (573) 761-4062

COPY

Mr. Vince Jones
December 15, 1999
Page Two

Should you have any questions, please call me at (800) 765-2765.

Sincerely,

WILLIAMS & COMPANY CONSULTING, INC.



David L. Pate, PG
PSTIF Claims Manager

DLP/vsy

C: Hashim Mukhtar, DNR
Ed Shepherd, Schreiber, Yonley & Associates
John Stone, Williams & Company





Mel Carnahan, Governor • Stephen M. Mahfood, Director

DEPARTMENT OF NATURAL RESOURCES


DIVISION OF ENVIRONMENTAL QUALITY

P.O. Box 176 Jefferson City, MO 65102-0176

MEMORANDUM

DATE: November 17, 1999

TO: West Lake Quarry & Materials
Permit #0046

FROM: Mike Larsen, Chief 
Industrial Minerals Unit
Land Reclamation Program

SUBJECT: A. Permit Renewal
B. Annual Reclamation Status Report

A. Permit Renewal

This is to remind you that your permit expires on December 31, 1999. The renewal paperwork must be submitted to this office 30 days prior to the expiration of the permit. Therefore, I am sending you the necessary forms for a simple permit renewal. Please, complete, sign, notarize, and send them to my attention as soon as possible.

B. Annual Reclamation Status Report

The report must be submitted to this office 60 days after your permit expires. It should list all the locations you mined and describe any reclamation work done by West Lake Quarry & Materials during the period January 1, 1998 through December 31, 1999. Please follow the attached instructions and return the completed forms, along with two copies of the map outlining last year's operation, to this office by February 28th.

If you have any questions or need additional forms please call me at (573) 751-4041.

Enclosures: Annual Reclamation Status Report Form
Permit Application Form

ML:ajw



Mel Carnahan, Governor • Stephen M. Mahfood, Director

COPY

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL QUALITY

P.O. Box 176 Jefferson City, MO 65102-0176

October 12, 1999

Mr. Vince Jones
Maryon Industries
13570 St. Charles Rock Road
Bridgeton, MO 63044

RE: West Lake Quarry and Material, 13570 St. Charles Rock Road, Bridgeton, MO
ST0013618, R0003874

Dear Mr. Jones:

The Tanks Section of the Hazardous Waste Program has received and reviewed the September 24, 1999, Schreiber, Yonley & Associates work plan for free product recovery for the above-cited facility. The plan involves the installation of a free product recovery pump and quarterly groundwater monitoring for one year.

- ☒ The scope of work as written is approved.
- ☐ The scope of work as written is rejected. If this box is checked, justification for the rejection will follow.
- ☐ The scope of work is approved with modification. If this box is checked, you must ensure the below listed conditions are met.

Please direct questions regarding the Petroleum Storage Tank Insurance Fund to the Fund Administrator at (573) 761-4060 or (800) 765-2765.

If you have any questions regarding this letter, you may contact Mr. Hugh Murrell of my staff at (573) 751-6822.

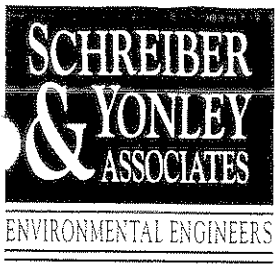
Sincerely,

HAZARDOUS WASTE PROGRAM


Jim Growney, Chief
Remediation Unit

JG:hml

c: Mr. David Pate, Williams and Company
Mr. Edward A. Shepard, Schreiber Yonley & Associates
Mr. Mike Struckhoff, St. Louis Regional Office



271 Wolfner Drive • Saint Louis, Missouri 63026
314/349-8399 • Fax 314/349-8384

September 24, 1999

Mr. Hugh Murrell
Missouri Department of Natural Resources
Tanks Section
1738 East Elm
Jefferson City, MO 65101

RE: West Lake Quarry & Material
13570 St. Charles Rock Road
Bridgeton, Missouri
ST0013618, R0003874

RECEIVED

SEP 27 1999

HAZARDOUS WASTE PROGRAM
MISSOURI DEPARTMENT OF
NATURAL RESOURCES

Dear Mr. Murrell:

Schreiber, Yonley & Associates, on behalf of Maryon Industries, Inc., is submitting the following scope of work for free product recovery from the above referenced facility. This submittal is in response to the Missouri Department of Natural Resources (MDNR) correspondence dated July 8, 1999 requesting a workplan and budget be prepared to perform aggressive free product recovery at the above referenced facility.

The following text describes the currently anticipated scope of work.

SCOPE OF WORK

Task 1 Product Recovery

1. Install one (1) FerretTM (Manufactured by QED Environmental Systems, Inc.) product recovery pump in monitoring well MW-1A. The FerretTM pump is a pneumatically operated pump which recovers product only and leaves water in the well. The pump will be equipped with an automatic controller and an automatic shut off valve to prevent overfilling of the recovered product container.
2. Product will be collected and containerized in properly labeled, DOT approved, 55-gallon, steel drums. The drums will be stored on-site pending proper disposal.



Task 2 Product Recovery Monitoring

1. Monitor the pump and product level on a weekly basis for the first month, bi-weekly the second month, and then on a monthly basis.
2. Submit a monthly free product recovery report summarizing amount of free product collected and depth of product remaining in the monitoring well.

Task 3 Quarterly Groundwater Monitoring

1. Measure the depth to groundwater utilizing an electronic water level indicator or an electronic interface probe if free product is encountered.
2. Following the measurement of the groundwater depth in each well, the well will be purged by removing a minimum of three (3) well casing volumes of groundwater. Well purging activities will be accomplished using a dedicated, disposable polyethylene bailer.

Purge water generated during the purging activities will be contained and stored on-site in labeled, 55-gallon, DOT-approved steel drums. Purge water will be stored on-site, pending receipt of the groundwater sample analytical results from the monitoring wells. Purge water generated from the monitoring well purging activities will be properly disposed.

3. Upon completion of well purging activities, a groundwater sample will be collected from each monitoring well utilizing a disposable, polyethylene bailer. The bailer will be lowered into the water column within the monitoring well. Upon removal of the bailer, the groundwater sample will be poured directly into precleaned, laboratory supplied sample containers. The sample containers will be labeled with the collection date and time, sample identification, type of preservative utilized, and collector's name. The sample containers will be placed in a cooler and cooled to approximately four (4) degrees Celsius and shipped via next day delivery to the selected analytical laboratory. A chain-of-custody form will be generated and included with the samples for transport to the laboratory.
4. The groundwater samples will be analyzed for total petroleum hydrocarbons (TPH); benzene, toluene, ethylbenzene, and xylenes (BTEX); and methyl tertiary butyl ether (MTBE) in accordance with method OA-1/OA-2.
5. Upon completion of the monitoring well sampling activities and receipt of analytical results for the monitoring wells, Schreiber, Yonley & Associates will develop a summary report. The report will detail the monitoring well sampling activities as well as present field and analytical data from the previous sampling events.



Mr. Hugh Murrell
September 24, 1999
Page 3

Schreiber, Yonley & Associates is proposing to perform Tasks 2 and 3 for a period of one (1) year. At the end of one (1) year, the data will be evaluated to determine if further remedial activities are needed.

Pump estimates and specifications are included as Attachment A and the Schreiber, Yonley & Associates cost estimate is included as Attachment B.

Should you have any questions or need additional information, please do not hesitate to contact me at (636) 349-8399.

Sincerely,

SCHREIBER, YONLEY & ASSOCIATES


Edward A. Shepare, Jr., P.E.
Senior Engineer

Attachments

cc: Mr. Mike Jones – Maryon Industries, Inc.

MII\980125\WEST LAKE QUARRY RPT.DOC



ATTACHMENT A
PUMP ESTIMATES AND SPECIFICATIONS

QED ENVIRONMENTAL SYSTEMS, INC.

Estimate #
R0999-27555

P.O. Box 3726 Ann Arbor, MI 48106 Phone: 1-800-624-2026 Fax: 1-734-995-1170

September 23, 1999

To: **Ed Shepard**
Schrieber Grana & Yonley
271 Wolfner Drive

Fenton, MO 63026

Phone: 314-349-8399
Fax: 314-349-8384

Your QED Rep: **Gunnar Peterson**
A-Better Earth
Phone: 913-888-0024 800-386-5134
Fax: 913-888-8566
E-mail: abeinc@swbell.net
Prepared by: Sunita Whitehead

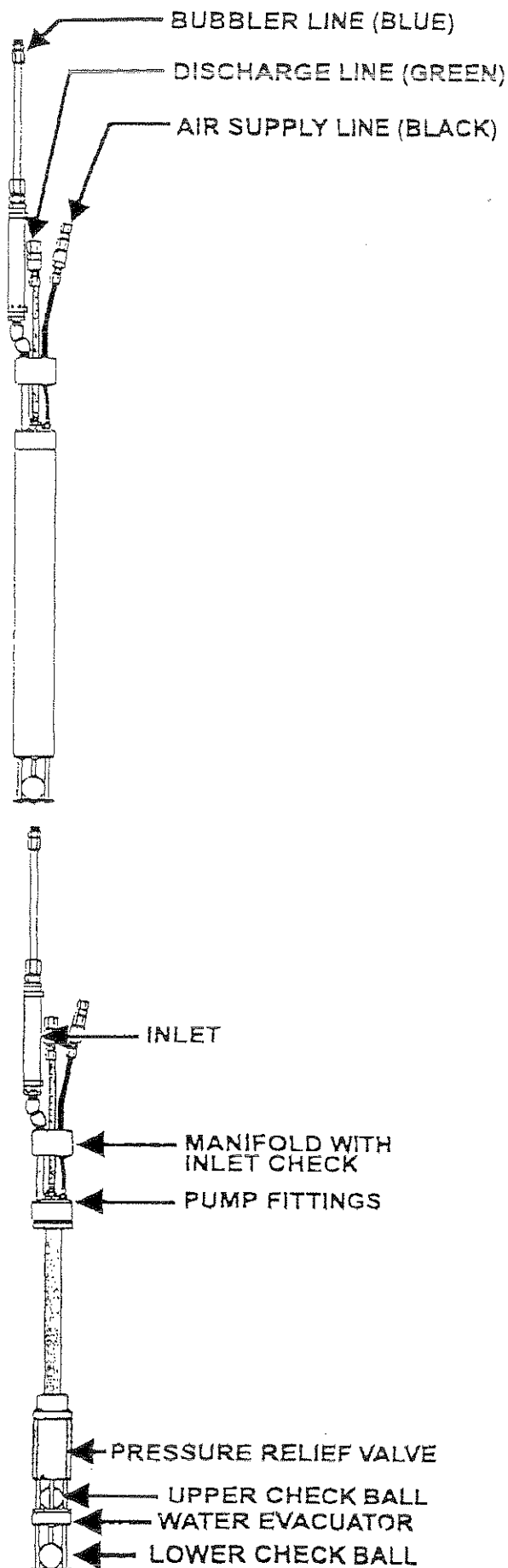
Site/Reference: Diesel at Asphalt Plant

<u>Item</u>	<u>Qty</u>	<u>Unit</u>	<u>Product Description / Part Number</u>	<u>Unit Price</u>	<u>Extended Price</u>
1)	1	EA	FPR7 Alpha Ferret Free-Product Recovery Package. Includes (1) Alpha Style Ferret (AIWS22 or AIWSFI12), (1) C100 Solar / Electric Controller, (1) TH3 portable compressor, (1) L374 Full-Tank shut off system, (1) 37880 Exhaust valve, (1) 37342 Ferret Positioning Tool, (1) Ferret slip fit well cap (S2M or S4M), and up to 25 feet of downwell product discharge / air supply / locater line tubing. FPR7 -----	3,495.00	3,495.00
2)	1	FT	Gasoline resistant, UV protected, black nylon tubing, 1/2" OD. Surface Discharge Tubing. Per ft pricing. 35097 -----	1.40	1.40
3)	1	FT	Gasoline resistant, UV protected, black nylon tubing, 1/4" OD. Surface Air Supply Tubing. Per ft pricing. 35715 -----	0.85	0.85

ESTIMATE TOTAL 3,497.25

OPTIONAL ITEM(S)

4)	1	EA	Electric Auto Tank Drain Kit for TH3 Compressor. Compressor tanks need to be drained regularly, either manually or with an auto drain kit. THDRAIN -----	205.00	205.00
5)	1	EA	TH3 Series Desiccant Air Dryer Pkg. Capable of drying up to 4,400 SCF of air. Recommended for use with up to 3 Standard Ferret In-Well Separator's. Includes Particulate and After filter assemblies. THDESDRIER -----	285.00	285.00



Separator Type:

Positive Air Displacement

Dimensions:

O.D.: 1.75" (45mm)
 Length: 26" (67cm)
 Weight: 2.5 lbs.
 Minimum Well Diameter: 2" (50mm) or larger
 Inlet Port: 21" (54 cm) above bottom of device

Materials:

Stainless Steel, Brass, Delrin, Polypropylene and Viton O-rings.

Fittings:

Type: Brass Compression
 Discharge Size: 1/2" O.D. (13 mm)
 Air Supply Size: 3/8" O.D. (6 mm)
 Level Gauge: 1/4" O.D. (6 mm)

Separator Performance:

Operating Pressure Range: 50-100 P.S.I. (350-700 kPa)
 Maximum Lift: 150 FEET (45 m)
 Estimated Air Flow: 0.5-1.0 S.C.F.M. at 50 P.S.I. (350 kPa)

Separator Flow Rates:

Up to 100 G.P.D. (379 L.P.D.) possible with 6" (15 cm) or more of product submergence over inlet. Rate will vary depending on conditions.

Discharge Amount:

Maximum product volume per cycle 0-.05 gal. (180 ml), varies depending upon amount of water that enters and is expelled by the separator. THE IN-WELL SEPARATOR WILL ONLY DISCHARGE PRODUCT TO THE SURFACE.

Product Pumped Density:

0.7-0.90 g/cc

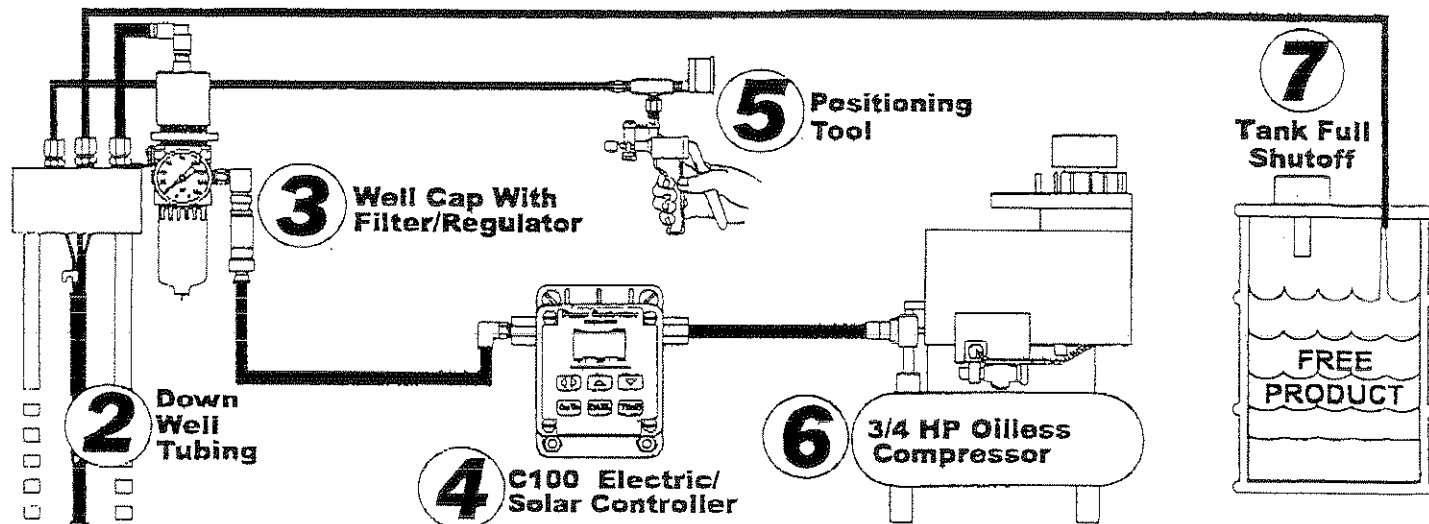
Viscosity Range:

The short In-Well Separator is recommended for liquids with kinematic viscosities ≤ 40 centistokes. Suitable liquids that may meet the viscosity recommendations are gasoline, JP4, JP5, Kerosene, Diesel Fuel, #2 Fuel Oil and #3 Fuel Oil. Incompatible liquids include #5 (and above) Fuel Oil, SAE 10 (and above) Motor Oil, and Hydraulic Fluids.

FERRET™

IN WELL SEPARATOR

FREE PRODUCT RECOVERY PACKAGES



New... Specially Priced Free Product Recovery Packages

The Ready-to-Use Package Includes:

- ① **Ferret In-Well Separator**
Unique product recovery system that delivers pure product to the surface without troublesome hydrophobic screens.
- ② **Down Well Tubing**
25 feet of down well Nylon 12 tubing for Ferret air, liquid and positioning lines.
- ③ **Well Cap With Filter/Regulator**
Available for 2" or 4" wells.
- ④ **Electric/Solar Controller**
Easy digital control to optimize product recovery. 110V or solar capabilities.
- ⑤ **Positioning Tool**
Easy to use hand pump makes positioning the Ferret a snap.
- ⑥ **Reliable 3/4 HP Oilless Compressor**
Lightweight, designed for portable use.
- ⑦ **Pneumatic Tank Full Shutoff**
Explosion-proof sensor, for reliable shut down to prevent tank overfill.

1
Ferret In-Well
Separator

▼ **QED Environmental Systems, Inc.**

P.O. Box 3726, Ann Arbor, Michigan 48106 734-995-2547 800-624-2026 Fax: 734-995-1170

E-Mail: info@qedenv.com Website: <http://www.qedenv.com>

P/N 2142 REV. #2 2-25-99



PRODUCT RECOVERY PACKAGES

SPECIFICATIONS:

	STANDARD FERRET PACKAGE FPR7	HIGH CAPACITY FERRET PACKAGE FPR10	AUTOMATIC FERRET PACKAGE FPR15
Ferret Pump Model:	AIWS22 Inlet Type: Fixed Inlet Advantages: Requires little liquid depth, higher gallons per day Max. Viscosity: 100 Centistokes Min. Liquid Depth: 21" (53 cm) (OR) AIWSFI12 Inlet Type: Floating Inlet Advantages: Requires little liquid depth, follows liquid level changes Max. Viscosity: 4 Centistokes Min. Liquid Depth: 35" (89 cm)	HIWS42 Inlet Type: Fixed Inlet Advantages: Highest Viscosity & gallons/day, passes more solids, needs little liquid depth Max. Viscosity: 1000 Centistokes Min. Liquid Depth: 18" (46 cm) (OR) HIWSFI12 Inlet Type: Floating Inlet Advantages: Higher viscosity & gallons/day, passes solids, follows liquid level changes Max. Viscosity: 4 Centistokes Min. Liquid Depth: 35" (89 cm)	SIWS24 Inlet Type: Fixed Inlet Advantages: Controllerless, higher gallons per day Max. Viscosity: 40 Centistokes Min. Liquid Depth: 45" (114 cm) (OR) IWS26 Inlet Type: Floating Inlet Advantages: Controllerless, follows liquid level changes Max. Viscosity: 4 Centistokes Min. Liquid Depth: 60" (153 cm)
Compressor:	Dimensions: 19" (48.2 cm)(L) x 15.6" (39.6 cm)(W) x 16.5" (41.9 cm) (H) Shipping Weight: 54 LBS. (24.5 Kg) AMPS: 11.4 Voltage: 115V Motor Size: 3/4 HP Compressor Type: Oilless Single Piston Air Delivery: 2.1 C.F.M. @ 100 P.S.I. Receiver Tank: 4.5 Gal. (17 Ltr.)	Dimensions: 19" (48.2 cm)(L) x 15.6" (39.6 cm)(W) x 16.5" (41.9 cm) (H) Shipping Weight: 54 LBS. (24.5 Kg) AMPS: 11.4 Voltage: 115V Motor Size: 3/4 HP Compressor Type: Oilless Single Piston Air Delivery: 2.1 C.F.M. @ 100 P.S.I. Receiver Tank: 4.5 Gal. (17 Ltr.)	Dimensions: 19" (48.2 cm)(L) x 15.6" (39.6 cm)(W) x 16.5" (41.9 cm) (H) Shipping Weight: 54 LBS. (24.5 Kg) AMPS: 11.4 Voltage: 115V Motor Size: 3/4 HP Compressor Type: Oilless Single Piston Air Delivery: 2.1 C.F.M. @ 100 P.S.I. Receiver Tank: 4.5 Gal. (17 Ltr.)
Well Cap:	Well Diameter: 2" or 4" Materials: PVC Type: "Slip Fit"	Well Diameter: 4" Materials: PVC Type: "Slip Fit"	Well Diameter: 2" or 4" Materials: PVC Type: "Slip Fit"
Filter/Regulator:	Gauge Range: 0-125 P.S.I. Filtration: 5 Micron	Gauge Range: 0-125 P.S.I. Filtration: 5 Micron	Gauge Range: 0-125 P.S.I. Filtration: 5 Micron
Pneumatic Tank Full Shutoff:	Weight: 8 LBS. (3.2 Kg) Pressure Range: 40-100 P.S.I. Max. Air Tube Length: 250 FT. (76.2 m)	Weight: 8 LBS. (3.2 Kg) Pressure Range: 40-100 P.S.I. Max. Air Tube Length: 250 FT. (76.2 m)	Weight: 8 LBS. (3.2 Kg) Pressure Range: 40-100 P.S.I. Max. Air Tube Length: 250 FT. (76.2 m)
Ferret Positioning Tool:	Gauge Range: 0-20 Inches	Gauge Range: 0-20 Inches	Gauge Range: 0-20 Inches
Controller:	Dimensions: 3.5" (8.9 cm)(W) x 3.65" (9.3 cm)(H) x 3.5" (8.9 cm) (D) Shipping Weight: 3 LBS. (1.4 Kg) Operating Temperature Range: -20° F to 150° F (29° C to 65° C)	Dimensions: 3.5" (8.9 cm)(W) x 3.65" (9.3 cm)(H) x 3.5" (8.9 cm) (D) Shipping Weight: 3 LBS. (1.4 Kg) Operating Temperature Range: -20° F to 150° F (29° C to 65° C)	Not Required

ATTACHMENT B

SCHREIBER, YONLEY & ASSOCIATES ESTIMATE

COST ESTIMATE
13570 ST. CHARLES ROCK ROAD
BRIDGETON, MISSOURI

TASK 1 – FREE PRODUCT RECOVERY

Item 1 – Workplan Development

Senior Engineer	\$90/hr	8 hrs	\$720.00
Clerical	\$35/hr	3 hrs	<u>\$105.00</u>
	Subtotal (Labor)		\$825.00

Photocopying, Facsimile, Telephone, Postage			<u>\$35.00</u>
	Subtotal (Materials)		\$35.00

Item 1 Total Cost \$860.00

Item 2 – Pump Installation

Engineering Technician	\$45.00/hr	20 hrs	\$900.00
Senior Engineer	\$90.00/hr	2 hrs	<u>\$180.00</u>
	Subtotal (Labor)		\$1,080.00

Photocopying, Facsimile, Telephone, Postage			\$45.00
Pump (QED Ferret™), Includes Product			\$3,985.00
Recovery Package, Dryer, Drain Kit			
Tubing (Discharge, Air Supply)			\$115.00
Miscellaneous			<u>\$250.00</u>
	Subtotal (Materials)		\$4,395.00

Truck			\$200.00
Miscellaneous Tools			<u>\$100.00</u>
	Subtotal (Equipment)		\$300.00

Item 2 Total Cost \$5,775.00

Item 3 – Product Recovery (1 year period)

Senior Engineer	\$90.00/hr	12	<u>\$1,080.00</u>
	Subtotal (Labor)		\$1,080.00

Photocopying, Facsimile, Telephone, Postage			\$45.00
Drums	\$35.00	24	\$840.00
Drum Disposal	\$125.00/drum	24	<u>\$3,000.00</u>
	Subtotal (Materials)		\$3,885.00

Item 3 Total Cost \$4,965.00

TOTAL COST TASK 1 \$11,600.00

**COST ESTIMATE
13570 ST. CHARLES ROCK ROAD
BRIDGETON, MISSOURI**

TASK 2 – FREE PRODUCT RECOVERY MONITORING

Item 1 – Site Visits

Engineering Technician	\$45/hr	2 hrs	\$90.00
Senior Engineer	\$90/hr	1/2 hrs	<u>\$45.00</u>
Subtotal (Labor)			\$135.00

Photocopying, Facsimile, Telephone, Postage			\$10.00
PPE			<u>\$5.00</u>
Subtotal (Materials)			\$15.00

Company Truck			\$25.00
Interface Probe			<u>\$10.00</u>
Subtotal (Equipment)			\$35.00

**Item 1 Trip Cost \$185.00
x 16 Trips/Year \$2,960.00**

Item 2 – Monthly Reports

Environmental Engineer	\$75.00/hr	2 hrs	\$150.00
Senior Engineer	\$90.00/hr	½ hrs	\$45.00
Clerical	\$35.00	1 hr	<u>\$35.00</u>
Subtotal (Labor)			\$230.00

Photocopying			<u>\$15.00</u>
Subtotal (Materials)			\$15.00

**Item 2 Cost Per Report \$245.00
x 12 Reports/Year \$2,940.00**

Task 2 Total Cost \$5,900.00

**COST ESTIMATE
13570 ST. CHARLES ROCK ROAD
BRIDGETON, MISSOURI**

TASK 3 – QUARTERLY GROUNDWATER MONITORING

Item 1 – Monitoring Well Sampling

Engineering Technician	\$45.00/hr	8 hrs	\$360.00
Senior Engineer	\$90.00/hr	2 hrs	<u>\$180.00</u>
Subtotal (Labor)			\$540.00

Photocopying, Facsimile, Telephone, Postage			\$25.00
PPE			\$10.00
Bailers			\$40.00
Drum			\$35.00
Ice			<u>\$5.00</u>
Subtotal (Materials)			\$115.00

Company Truck			\$100.00
Water Level			\$15.00
Interface Probe			<u>\$30.00</u>
Subtotal (Equipment)			\$145.00

OA-1/OA-2	\$90/Sample	5 Samples	<u>\$450.00</u>
Subtotal (Analytical)			\$450.00

Drum Disposal	\$125/Drum	1 Drum	<u>\$125.00</u>
Subtotal (Disposal)			\$125.00

Item 1 Total Cost \$1,375.00

Item 2 – Report Development/Submittal

Environmental Scientist/Engineer I	\$75/hr	4 hrs	\$300.00
Senior Engineer	\$90/hr	1 hr	\$90.00
CADD	\$50/hr	3 hrs	\$150.00
Clerical	\$35/hr	2 hrs	<u>\$70.00</u>
Subtotal (Labor)			\$610.00

Photocopying, Facsimile, Telephone, Postage			<u>\$35.00</u>
Subtotal (Materials)			\$35.00

Item 2 Total Cost \$645.00

**Total Task 3 Cost \$2,020.00
x 4 Events/Year \$8,080.00**

TOTAL PROJECT COST \$25,580.00

5773376
R3874



Mel Carnahan, Governor • Stephen M. Mahfood, Director

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL QUALITY

P.O. Box 176 Jefferson City, MO 65102-0176

August 27, 1999

Mr. Vince Jones
Maryon Industries
13570 St. Charles Rock Road
Bridgeton, MO 63044

RE: West Lake Quarry and Material, 13570 St. Charles Rock Road, Bridgeton, MO
ST0013618, R0003874

Dear Mr. Jones:

The Tanks Section of the Hazardous Waste Program has received and reviewed the August 16, 1999, Schreiber Yonley & Associates request for an extension for submittal of a corrective action plan for the above-cited facility. The department approves a 30-day extension. Please submit the corrective action plan no later than September 27, 1999.

If you have any questions regarding this letter, you may contact Mr. Hugh Murrell of my staff at (573) 751-6822.

Sincerely,

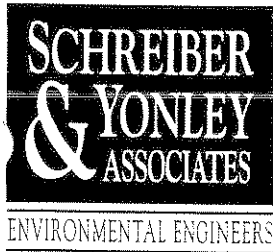
HAZARDOUS WASTE PROGRAM

A handwritten signature in black ink, reading "Jim Growney", is written over the typed name.

Jim Growney, Chief
Remediation Unit

JG:hml

c: Mr. David Pate, Williams and Company
Mr. Edward A. Shepard, Schreiber Yonley & Associates
Mr. Mike Struckhoff, St. Louis Regional Office



271 Wolfner Drive • Saint Louis, Missouri 63026
314/349-8399 • Fax 314/349-8384

August 16, 1999

Mr. Hugh Murrell
Hazardous Waste Program
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, Missouri 65102-0176

RE: West Lake Quarry and Material
13570 St. Charles Rock Road
Bridgeton, Missouri
ST0013618, R0003874

RECEIVED

AUG 18 1999

HAZARDOUS WASTE PROGRAM
MISSOURI DEPARTMENT OF
NATURAL RESOURCES

Dear Mr. Murrell:

Schreiber, Yonley & Associates has received correspondence from MDNR, dated July 8, 1999 requesting a corrective action plan for aggressive product recovery for MW-1A be submitted within 45 days of receipt of the letter. Per our telephone conversation on August 16, 1999, Schreiber, Yonley & Associates is requesting on behalf of Maryon Industries, a thirty day extension for submission of this corrective action plan.

Please contact Mr. Edward Shepard at (636) 349-8399 with questions or comments regarding this correspondence.

Sincerely,

SCHREIBER, YONLEY & ASSOCIATES

A handwritten signature in cursive script, reading 'Amy R. Stewart'.

Amy R. Stewart
Environmental Engineer



STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Mel Carnahan, Governor • Stephen M. Mahood, Director

DIVISION OF ENVIRONMENTAL QUALITY

P.O. Box 176 Jefferson City, MO 65102-0176

July 8, 1999

Mr. Vince Jones
Maryon Industries
13570 St. Charles Rock Road
Bridgeton, MO 63044

RE: West Lake Quarry and Material, 13570 St. Charles Rock Road, Bridgeton, MO
ST0013618, R0003874

Dear Mr. Jones:


The Tanks Section of the Hazardous Waste Program has received and reviewed the June 14, 1999, Schreiber, Yonley & Associates, Quarterly Groundwater Monitoring Report for the above-cited facility. The analytical data in the report indicates that significant contamination still exists in the area of monitoring wells MW-1A, MW-4A, and MW-5A. Incidentally, the department requested a corrective action plan for more aggressive product recovery from MW-1A in two letters from the department dated May 20, 1998, and November 13, 1998. Please explain the delay in the completion of this plan. Please submit a corrective action plan for aggressive product recovery from MW-1A within 45 days of receipt of this letter.

The department looks forward to reviewing the next groundwater monitoring report as soon as it is available.

If you have any questions regarding this letter, you may contact Mr. Hugh Murrell of my staff at (573) 751-6822.

Sincerely,

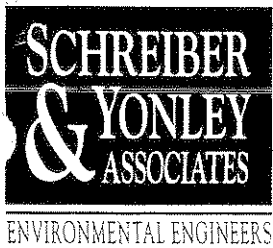
HAZARDOUS WASTE PROGRAM



Jim Gowney, Unit Chief
Remediation Unit

JG:hmg

c: Mr. David Pate, Williams and Company
Mr. Edward A. Shepard, Schreiber, Yonley & Associates
Mr. Mike Struckhoff, St. Louis Regional Office



271 Wolfner Drive • Saint Louis, Missouri 63026
314/349-8399 • Fax 314/349-8384

June 14, 1999

Missouri Department of Natural Resources
Hazardous Waste Program
Tanks Section
P.O. Box 176
Jefferson City, Missouri 65102-0176

RE: Maryon Industries, Inc.
13570 St. Charles Rock Road
Bridgeton, Missouri 63044
Quarterly Groundwater Monitoring Report – April 13, 1999
ST0013618, R0003874

RECEIVED

JUN 16 1999

HAZARDOUS WASTE PROGRAM
MISSOURI DEPARTMENT OF
NATURAL RESOURCES

Gentlemen:

Schreiber, Yonley & Associates, on behalf of Maryon Industries, Inc., has enclosed for your review one (1) copy of the Quarterly Groundwater Monitoring Report for the above-referenced site. This report provides a summary of environmental activities conducted on April 13, 1999, at the site by Schreiber, Yonley & Associates.

If you have any questions, please do not hesitate to contact me at (314) 349-8399.

Sincerely,

SCHREIBER, YONLEY & ASSOCIATES

A handwritten signature in black ink, appearing to read 'Ed A. Shepard, Jr.'.

Edward A. Shepard, Jr., P.E.
Senior Engineer

Enclosure

cc: Mr. Mike Jones – Maryon Industries, Inc.

MIT980125\QUARTERLY GW REPORT.DOC

RECEIVED

JUN 16 1999

HAZARDOUS WASTE PROGRAM
MISSOURI DEPARTMENT OF
NATURAL RESOURCES

**QUARTERLY GROUNDWATER
MONITORING REPORT,
April 13, 1999**

**MARYON INDUSTRIES, INC.
13570 ST. CHARLES ROCK ROAD
BRIDGETON, MISSOURI 63044**

ST0013618, R0003874

June 14, 1999

PREPARED FOR:

**MR. MIKE JONES
MARYON INDUSTRIES, INC.
2579 ROCK HILL ROAD
ST. LOUIS, MISSOURI 63144**

PREPARED BY:

**SCHREIBER, YONLEY & ASSOCIATES
271 WOLFNER DRIVE
ST. LOUIS, MISSOURI 63026**

PROJECT NO. 980125



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2.1	Groundwater Monitoring Well Fluid Level Measurements	1
2.2	Groundwater Sampling Procedures	4
3.0	ANALYTICAL RESULTS	4

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APPENDICES

APPENDIX A	MONITORING WELL REPORT
APPENDIX B	GROUNDWATER MONITORING FIELD FORM
APPENDIX C	ANALYTICAL REPORT



1.0 INTRODUCTION

Schreiber, Yonley & Associates, on behalf of Maryon Industries, Inc. (MII) is submitting the following report for groundwater sampling activities conducted at the MII facility located at 13570 St. Charles Rock Road in Bridgeton, Missouri on April 13, 1999. This report is the first of four quarterly reports to be submitted under the current workplan. There is a total of five (5) groundwater monitoring wells associated with the site, designated MW-1A, MW-2A, MW-3A, MW-4A and MW-5A.

The work described herein was conducted/completed in accordance with the Groundwater Sampling Workplan (Workplan), dated May 18, 1998. The Missouri Department of Natural Resources (MDNR) approved the Workplan without revisions on November 13, 1998.

2.0 METHODS OF INVESTIGATION

The objectives of this sampling event are to monitor for the presence of total petroleum hydrocarbons (TPH); benzene, toluene, ethylbenzene, and xylenes (BTEX); and methyl tertiary butyl ether (MTBE) in the uppermost groundwater beneath the property, and to evaluate if the concentrations are in excess of MDNR groundwater cleanup guidelines.

2.1 Groundwater Monitoring Well Fluid Level Measurements

The fluid levels of the five (5) groundwater monitoring wells were gauged by a Schreiber, Yonley & Associates representative on April 13, 1999. This was done to determine the presence of liquid-phase hydrocarbons and/or groundwater in the wells. The measurements of groundwater depths were taken from the top of the well casing with an ORS® Interface Probe. This device is an audible electronic probe which measures fluid levels to an accuracy of 0.01 feet.

The fluid level measurements gathered at the site are presented on the Monitoring Well Report included in Appendix A. Table 1 includes the groundwater surface elevation data collected to date.

The measurements were then referenced to the top of the casing survey data and utilized for the determination of the groundwater surface elevation and groundwater flow direction and gradient. Figure 1 presents the groundwater elevations as determined from the April 13, 1999 data.

Liquid-phase hydrocarbons were observed in MW-1A with a thickness of 3.71 (feet) during the gauging event.

The fluid level measurement data was also utilized to calculate the water column within each monitoring well and the required volume of water to purge from each monitoring well prior to sampling.



TABLE 1

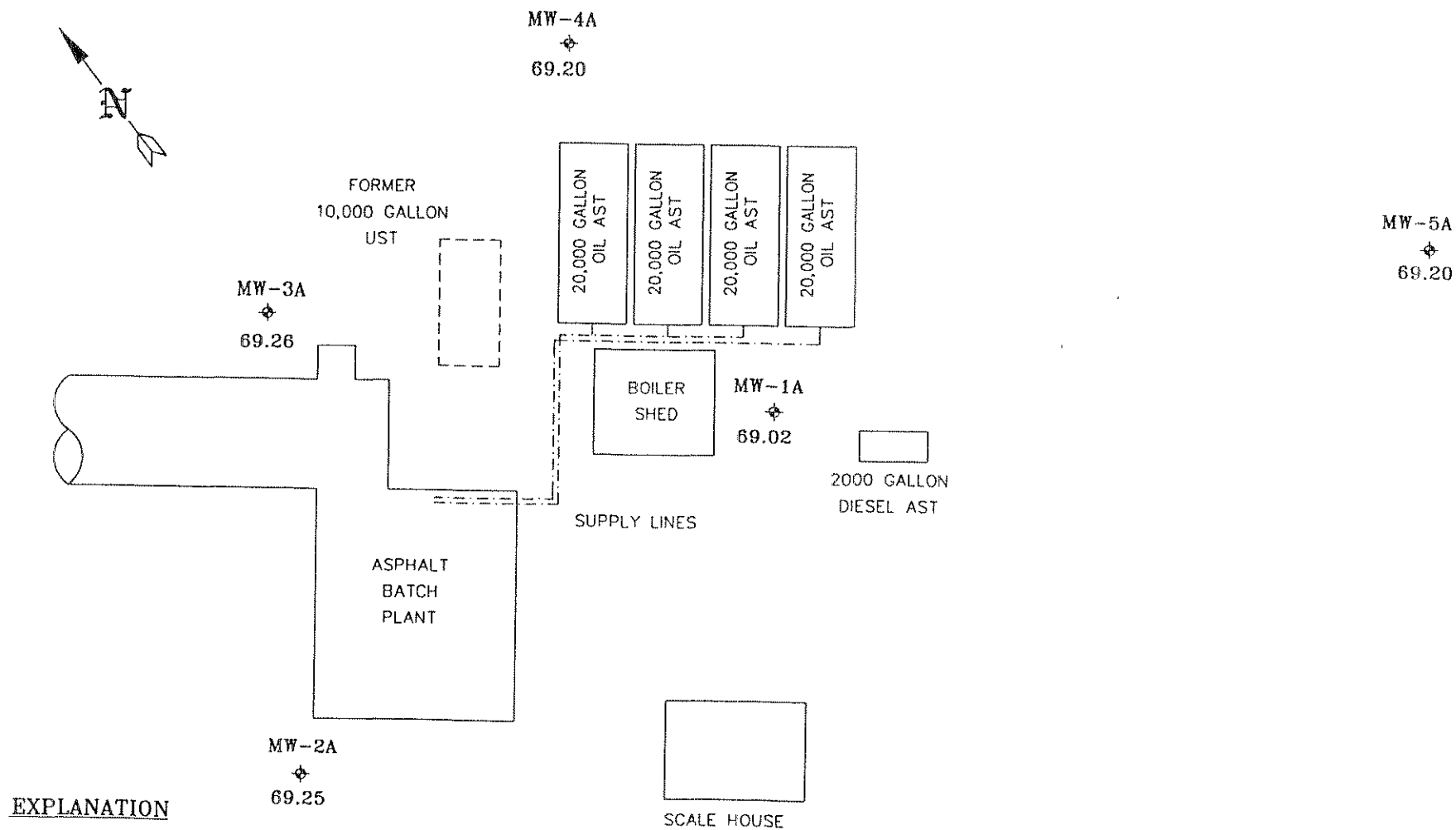
**GROUNDWATER ELEVATIONS
MARYON INDUSTRIES, INC.
BRIDGETON, MISSOURI**

Date	Well Designation	Casing Elevation	Depth to Groundwater (BCT)	Product Thickness	Groundwater Elevation
11-10-94	MW-1A	100.32	35.02	0.85	65.98**
	MW-2A	99.14	33.11	-	66.03
	MW-3A	99.31	33.25	-	66.06
	MW-4A	100.00	34.02	-	65.98
3-31-95	MW-1A	100.32	34.45	-	65.87
	MW-2A	99.14	32.30	-	66.84
	MW-3A	99.31	32.48	-	66.83
	MW-4A	100.00	33.17	-	66.83
	MW-5A	98.22	31.32	-	66.90
4-13-99	MW-1A	100.32	34.31	3.71	69.02**
	MW-2A	99.14	29.89	-	69.25
	MW-3A	99.31	30.05	-	69.26
	MW-4A	*97.32	28.12	-	69.20
	MW-5A	98.22	29.02	-	69.20

Note: BCT denotes below casing top.
Measurements and elevations are in feet.

*New top of casing elevation after damaged well was repaired in May 1995.

** Groundwater elevation corrected for product thickness.

**EXPLANATION**

♦ MONITORING WELL

AST ABOVEGROUND STORAGE TANK

UST UNDERGROUND STORAGE TANK

GROUNDWATER ELEVATIONS MAP

APRIL 13, 1999

MARYON INDUSTRIES, INC.
BRIDGETON, MISSOURI

FIGURE 1

NOT TO
SCALE

CHECKED BY:

DRAWN BY:

DATE DRAWN:

DRAWING #:

REVISION:

WKS

06-10-99

MII980125

**SCHREIBER
& YONLEY
ASSOCIATES**

ENVIRONMENTAL ENGINEERS

2.2 Groundwater Sampling Procedures

During the 1st quarterly groundwater sampling event (April 13, 1999), groundwater samples were collected from five (5) monitoring wells: MW-1A, MW-2A, MW-3A, MW-4A and MW-5A. The samples were collected utilizing dedicated, disposable, polyethylene bailers. A new bailer was utilized at each monitoring well to preclude the need for bailer washing/decontamination, and to prevent cross-contamination between monitoring wells and samples. New bailer twine and latex gloves were utilized for each monitoring well sampled to aid in the prevention of cross contamination.

A minimum of three (3) volumes of water was purged via hand bailing from each monitoring well to obtain a representative groundwater sample from the underlying sediments/formation. Purge water was contained and stored on-site. After completion of the purge activities, groundwater samples were obtained from each monitoring well and placed into laboratory provided sample containers. The sample containers were cooled to approximately 4° Celsius and shipped next day for delivery to Specialized Assays, Inc. in Nashville, Tennessee. The samples were labeled with the collection date, sample I.D., type of preservative utilized, and person collecting the sample. A chain-of-custody form was generated and included with the samples for transport to the laboratory. The groundwater samples were analyzed for BTEX, MTBE and TPH in accordance with Method OA-1/OA-2.

Appendix B presents a copy of the Groundwater Monitoring Field Form generated during the purging and sampling activities of the five (5) monitoring wells.

3.0 ANALYTICAL RESULTS

Groundwater analytical results from the April 13, 1999, sampling event produced nondetectable concentrations of toluene, ethylbenzene and xylenes in monitoring wells 2A, 3A and 4A. The sampling event produced nondetectable concentrations of toluene, ethylbenzene and MTBE in monitoring well 5A. Monitoring well 1A produced detectable concentrations of BTEX, TPH and MTBE. Monitoring wells 2A, 3A and 4A produced detectable concentrations of benzene, TPH and MTBE. Monitoring well 5A produced detectable limits of benzene, xylenes, and TPH.

As identified in Table 5 of the MDNR "Underground Storage Tank Closure Guidance Document" dated March 1996, the cleanup guideline for non-potable groundwater sources is 10 ppm for TPH, 0.05 ppm for benzene, 0.15 ppm for toluene, 0.32 ppm for ethylbenzene, 0.32 ppm for xylenes, and 0.75 ppm for total BTEX.

The cleanup guideline for non-potable groundwater sources for TPH has been exceeded in monitoring wells 1A (563.54 ppm), 4A (10.76 ppm) and 5A (16.35 ppm).

Table 2 includes the analytical results collected to date. Figure 2 depicts the distribution of the BTEX/TPH concentrations at the site for the April 13, 1999, sampling event. A copy of the Analytical Report and the chain-of-custody form is contained in Appendix C.



TABLE 2

**GROUNDWATER ANALYTICAL RESULTS
MARYON INDUSTRIES, INC.
BRIDGETON, MISSOURI**

Date	Location	Benzene	Toluene	Ethyl- benzene	Xylenes	Total BTEX	TPH	MTBE
11-10-94	MW-1A	NS	NS	NS	NS	NS	NS	NA
	MW-2A	0.001	<0.001	<0.001	<0.001	<0.004	<0.10	NA
	MW-3A	<0.001	<0.001	<0.001	<0.001	<0.004	0.16	NA
	MW-4A	<0.001	0.001	0.003	0.002	<0.007	13.8	NA
03-31-95	MW-1A	0.036	0.008	0.060	0.134	0.238	2450	NA
	MW-2A	0.001	<0.001	<0.001	<0.001	<0.004	0.58	NA
	MW-3A	0.002	<0.001	<0.001	<0.001	<0.005	<0.10	NA
	MW-4A	0.008	<0.001	0.005	<0.001	<0.015	34.5	NA
	MW-5A	0.002	0.001	<0.001	0.005	<0.009	1.41	NA
4-13-99	MW-1A	0.0245	0.001	0.0382	0.015	0.0787	563.54	0.0064
	MW-2A	0.002	ND	ND	ND	0.002	0.5	0.0066
	MW-3A	0.0029	ND	ND	ND	0.0029	0.33	0.009
	MW-4A	0.0097	ND	ND	ND	0.0097	10.76	0.0068
	MW-5A	0.0014	ND	ND	0.0025	0.0039	16.35	ND

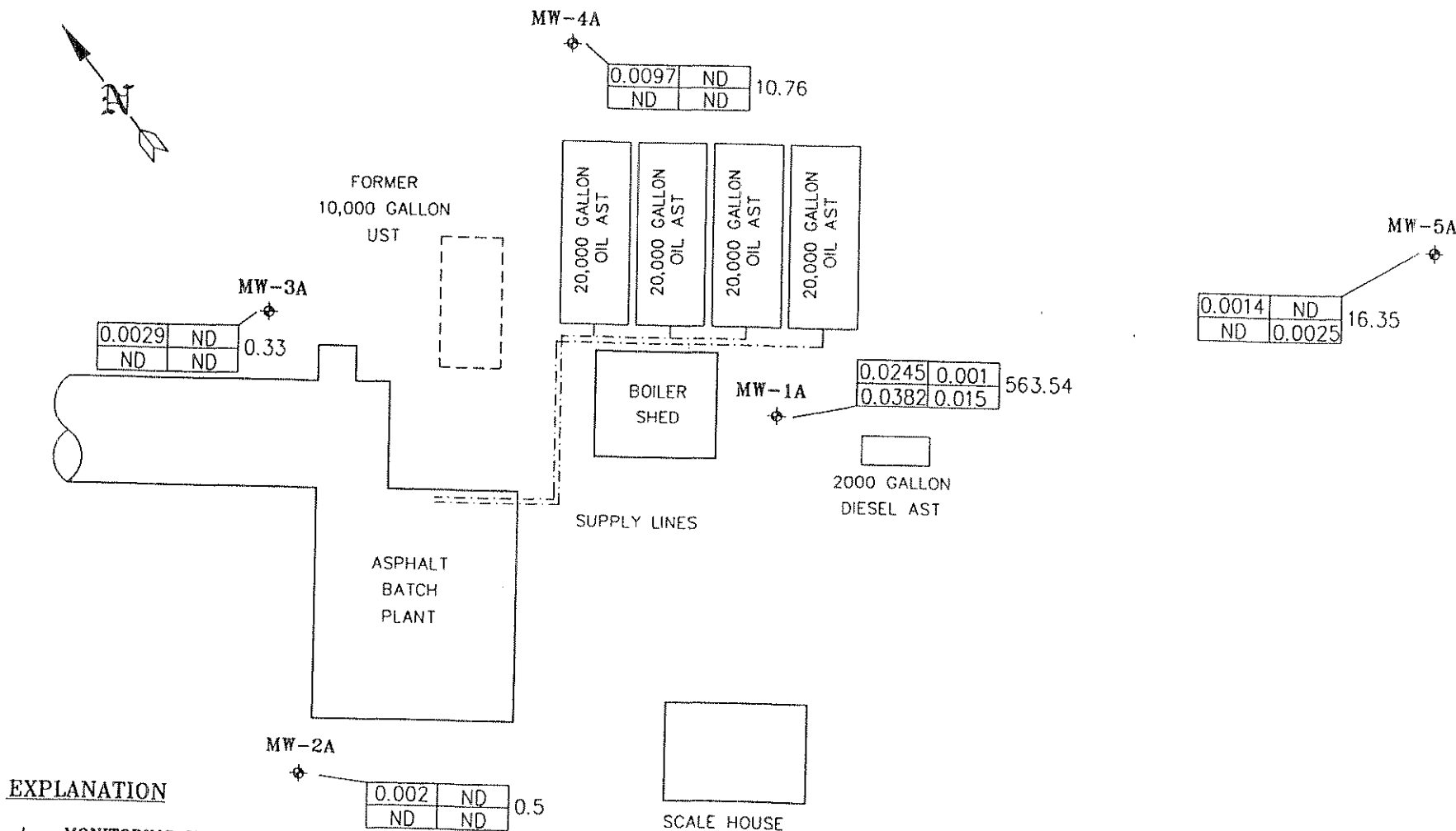
Notes: Results in ppm

Bold denotes exceedances of MDNR Non-Potable Groundwater Cleanup Guidelines of 0.05 for Benzene, 0.15 ppm for Toluene, 0.32 ppm for Ethylbenzene and 0.32 ppm for Xylenes; 0.75 ppm for Total BTEX; 10 ppm for TPH and 0.4 ppm for MTBE as identified in Table 5 of the MDNR "Underground Storage Tank Closure Guidance Document" dated March 1996.

NS – denotes not sampled.

NA – Not Analyzed

ND – not detected



SOLUBLE-PHASE BTEX/TPH DISTRIBUTION MAP

APRIL 13, 1999

MARYON INDUSTRIES, INC.
BRIDGETON, MISSOURI

FIGURE 2

NOT TO
SCALE

CHECKED BY:

DRAWN BY:

DATE DRAWN:

DRAWING #:

REVISION:

WKS

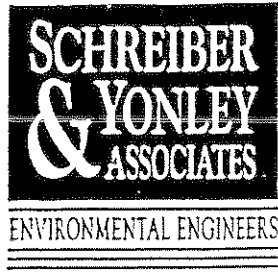
06-10-99

MHBTEX

**SCHREIBER
& YONLEY
ASSOCIATES**

ENVIRONMENTAL ENGINEERS

APPENDIX A
MONITORING WELL REPORT



MONITORING WELL REPORT

Client: <i>Maryon Industries, Inc.</i>	Project No.: <i>780125</i>
Project: <i>Monitoring well sampling</i>	Page: <i>1 of 1</i>
Observed by: <i>H. Pope</i>	Date: <i>4/13/99</i>
Prepared by: <i>H. Pope</i>	Date: <i>4/14/99</i>
Checked by:	Date:

MONITORING WELL #	CASING ELEVATION (ft)	DEPTH TO PRODUCT (ft)	DEPTH TO WATER (ft)	PRODUCT THICKNESS (ft)	WATER ELEVATION (ft)
MW-1A	100.32	30.60	34.31	3.71	69.02 **
MW-2A	99.14	—	29.89	—	69.25
MW-3A	99.31	—	30.05	—	69.26
MW-4A	97.32 *	—	28.12	—	69.20
MW-5A	98.22	—	29.02	—	69.20

Remarks: * Corrected elevation after damaged well was repaired in May of 1995.

* * Corrected elevation for product thickness.

APPENDIX B

GROUNDWATER MONITORING FIELD FORM

GROUNDWATER MONITORING FIELD FORM

[illegible]

APPENDIX C
ANALYTICAL REPORT



SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

CHRIEBER & YONLEY, INC 5314
D SHEPPARD
271 WOLFNER DRIVE
ST. LOUIS, MO 63026

Lab Number: 99-A53032
Sample ID: MW-1A
Sample Type: Water
Site ID:

Project: 980125
Project Name: MARYON INDUSTRIES, INC.
Sampler: HOMER POPE

Date Collected: 4/13/99
Time Collected: 11:30
Date Received: 4/15/99
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
Benzene	24.5	ug/l	1.0	1.0	1	4/21/99	14:08	F. Gundi	DA-1	8485
Toluene	1.0	ug/l	1.0	1.0	1	4/21/99	14:08	F. Gundi	DA-1	8485
Ethylbenzene	38.2	ug/l	1.0	1.0	1	4/21/99	14:08	F. Gundi	DA-1	8485
Xylenes, total	15.0	ug/l	1.0	1.0	1	4/21/99	14:08	F. Gundi	DA-1	8485
Methyl-t-butylether	6.4	ug/l	1.0	1.0	1	4/21/99	14:08	F. Gundi	DA-1	8485
TPH as Gasoline	2540	ug/l	100.	100.	1	4/21/99	14:08	F. Gundi	DA-1	8485
DA-2 Extractable Petroleum Products										
neral Spirits	ND	ug/l	51000	100.	500	4/19/99	1:23	K. Walkup	DA-2	339
kerosene	ND	ug/l	51000	100.	500	4/19/99	1:23	K. Walkup	DA-2	339
Diesel Fuel	561000	ug/l	51000	100.	500	4/19/99	1:23	K. Walkup	DA-2	339
Fuel Oil	ND	ug/l	51000	100.	500	4/19/99	1:23	K. Walkup	DA-2	339
Motor Oil	ND	ug/l	51000	100.	500	4/19/99	1:23	K. Walkup	DA-2	339
Hydraulic Fluid	ND	ug/l	51000	100.	500	4/19/99	1:23	K. Walkup	DA-2	339

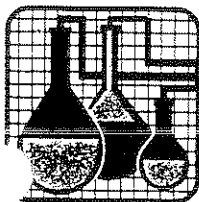
ND = Not detected at the report limit.

Sample Extraction Data

Parameter	Wt/Vol		Date	Analyst	Method
	Extracted	Extract Vol			
EPH	980. ml	1.00 ml	4/16/99	M. Cauthen	3510
DA-1 Sample pH	<2.0				
DA-2 Sample pH	0				

Surrogate	% Recovery	Target Range
EX/GRD Surrogate, a,a,a-trifluorotoluene	95.	50. - 150.

DA-2 surrogate was diluted out due to sample matrix.



SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
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ANALYTICAL REPORT

Laboratory Number: 99-A53032

Sample ID: MW-1A

Page 2

Report Approved By:

Michael H. Dunn

Report Date: 4/21/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director



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ANALYTICAL REPORT

CHRIEBER & YONLEY, INC. 5314
ED SHEPPARD
271 WOLFNER DRIVE
ST. LOUIS, MO 63026

Lab Number: 99-A53033
Sample ID: MW-2A
Sample Type: Water
Site ID:

Project: 980125
Project Name: MARYON INDUSTRIES, INC.
Sampler: HOMER POPE

Date Collected: 4/13/99
Time Collected: 12:10
Date Received: 4/15/99
Time Received: 9:00

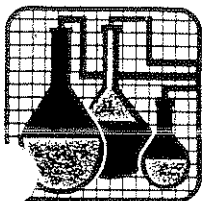
Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
Benzene	2.0	ug/l	1.0	1.0	1	4/20/99	21:50	F. Gundi	DA-1	8485
Toluene	ND	ug/l	1.0	1.0	1	4/20/99	21:50	F. Gundi	DA-1	8485
Ethylbenzene	ND	ug/l	1.0	1.0	1	4/20/99	21:50	F. Gundi	DA-1	8485
Xylenes, total	ND	ug/l	1.0	1.0	1	4/20/99	21:50	F. Gundi	DA-1	8485
Methyl-t-butylether	6.6	ug/l	1.0	1.0	1	4/20/99	21:50	F. Gundi	DA-1	8485
TPH as Gasoline	ND	ug/l	100.	100.	1	4/20/99	21:50	F. Gundi	DA-1	8485
DA-2 Extractable Petroleum Products										
Mineral Spirits	ND	ug/l	100.	100.	1	4/18/99	15:26	K. Walkup	DA-2	339
Aerosene	ND	ug/l	100.	100.	1	4/18/99	15:26	K. Walkup	DA-2	339
Diesel Fuel	ND	ug/l	100.	100.	1	4/18/99	15:26	K. Walkup	DA-2	339
Fuel Oil	500.	ug/l	100.	100.	1	4/18/99	15:26	K. Walkup	DA-2	339
Motor Oil	ND	ug/l	100.	100.	1	4/18/99	15:26	K. Walkup	DA-2	339
Hydraulic Fluid	ND	ug/l	100.	100.	1	4/18/99	15:26	K. Walkup	DA-2	339

ND = Not detected at the report limit.

Sample Extraction Data

Parameter	Wt/Vol		Date	Analyst	Method
	Extracted	Extract Vol			
EPH	1000 ml	1.00 ml	4/16/99	M. Cauthen	3510
DA-1 Sample pH	<2.0				
DA-2 Sample pH	8				

Surrogate	% Recovery	Target Range
p,p'-o-Terphenyl	71.	50. - 150.
EX/GRD Surr., a,a,a-trifluorotoluene	100.	50. - 150.



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ANALYTICAL REPORT

Laboratory Number: 99-A53033
Sample ID: MW-2A

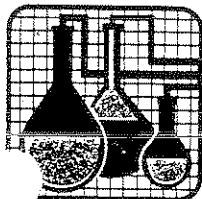
Page 2

Report Approved By:

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Report Date: 4/21/99

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Michael H. Dunn, M.S., Technical Director
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Eric Smith, Assistant Technical Director



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ANALYTICAL REPORT

CHRIEBER & YONLEY, INC. 5314
D SHEPPARD
271 WOLFNER DRIVE
ST. LOUIS, MO 63026

Lab Number: 99-A53034
Sample ID: MW-3A
Sample Type: Water
Site ID:

Project: 980125
Project Name: MARYON INDUSTRIES, INC.
Sampler: HOMER POPE

Date Collected: 4/13/99
Time Collected: 13:00
Date Received: 4/15/99
Time Received: 9:00

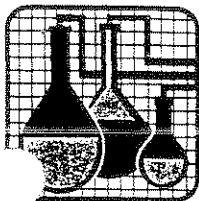
Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
Benzene	2.9	ug/l	1.0	1.0	1	4/20/99	23:30	F. Gundi	DA-1	8485
Toluene	ND	ug/l	1.0	1.0	1	4/20/99	23:30	F. Gundi	DA-1	8485
Ethylbenzene	ND	ug/l	1.0	1.0	1	4/20/99	23:30	F. Gundi	DA-1	8485
Xylenes, total	ND	ug/l	1.0	1.0	1	4/20/99	23:30	F. Gundi	DA-1	8485
Methyl-t-butylether	9.0	ug/l	1.0	1.0	1	4/20/99	23:30	F. Gundi	DA-1	8485
TPH as Gasoline	140.	ug/l	100.	100.	1	4/20/99	23:30	F. Gundi	DA-1	8485
DA-2 Extractable Petroleum Products										
Aral Spirits	ND	ug/l	100.	100.	1	4/18/99	15:55	K. Walkup	DA-2	339
Rosene	ND	ug/l	100.	100.	1	4/18/99	15:55	K. Walkup	DA-2	339
Diesel Fuel	ND	ug/l	100.	100.	1	4/18/99	15:55	K. Walkup	DA-2	339
Fuel Oil	190.	ug/l	100.	100.	1	4/18/99	15:55	K. Walkup	DA-2	339
Motor Oil	ND	ug/l	100.	100.	1	4/18/99	15:55	K. Walkup	DA-2	339
Hydraulic Fluid	ND	ug/l	100.	100.	1	4/18/99	15:55	K. Walkup	DA-2	339

ND = Not detected at the report limit.

Sample Extraction Data

Parameter	Wt/Vol		Date	Analyst	Method
	Extracted	Extract Vol			
EPH	1000 ml	1.00 ml	4/16/99	M. Cauthen	3510
DA-1 Sample pH	<2.0				
DA-2 Sample pH	8				

Surrogate	% Recovery	Target Range
p,p'-o-Terphenyl	88.	50. - 150.
1,2,4,5-Tetrafluorobenzene	101.	50. - 150.



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ANALYTICAL REPORT

Laboratory Number: 99-A53034
Sample ID: MW-3A

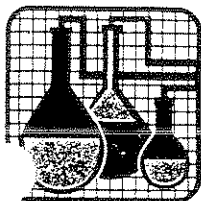
Page 2

Report Approved By:

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Report Date: 4/21/99

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SPECIALIZED ASSAYS, INC.

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ANALYTICAL REPORT

CHRIEBER & YONLEY, INC. 5314
D SHEPPARD
271 WOLFNER DRIVE
T. LOUIS, MD 63026

Lab Number: 99-A53035
Sample ID: MW-4A
Sample Type: Water
Site ID:

Project: 980125
Project Name: MARYON INDUSTRIES, INC.
Sampler: HOMER POPE

Date Collected: 4/13/99
Time Collected: 13:30
Date Received: 4/15/99
Time Received: 9:00

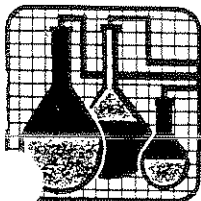
Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
Benzene	9.7	ug/l	1.0	1.0	1	4/21/99	14:42	F. Gundi	DA-1	8485
Toluene	ND	ug/l	1.0	1.0	1	4/21/99	14:42	F. Gundi	DA-1	8485
Ethylbenzene	ND	ug/l	1.0	1.0	1	4/21/99	14:42	F. Gundi	DA-1	8485
Xylenes, total	ND	ug/l	1.0	1.0	1	4/21/99	14:42	F. Gundi	DA-1	8485
Methyl-t-butylether	6.8	ug/l	1.0	1.0	1	4/21/99	14:42	F. Gundi	DA-1	8485
TPH as Gasoline	560.	ug/l	100.	100.	1	4/21/99	14:42	F. Gundi	DA-1	8485
DA-2 Extractable Petroleum Products										
Ineral Spirits	ND	ug/l	1010	100.	10	4/19/99	0:32	K. Walkup	DA-2	339
kerosene	ND	ug/l	1010	100.	10	4/19/99	0:32	K. Walkup	DA-2	339
Diesel Fuel	ND	ug/l	1010	100.	10	4/19/99	0:32	K. Walkup	DA-2	339
Fuel Oil	10200	ug/l	1010	100.	10	4/19/99	0:32	K. Walkup	DA-2	339
Motor Oil	ND	ug/l	1010	100.	10	4/19/99	0:32	K. Walkup	DA-2	339
Hydraulic Fluid	ND	ug/l	1010	100.	10	4/19/99	0:32	K. Walkup	DA-2	339

ND = Not detected at the report limit.

Sample Extraction Data

Parameter	Wt/Vol		Date	Analyst	Method
	Extracted	Extract Vol			
EPH	990. ml	1.00 ml	4/16/99	M. Cauthen	3510
DA-1 Sample pH	<2.0				
DA-2 Sample pH	8				

Surrogate	% Recovery	Target Range
p,p'-o-Terphenyl	50.	50. - 150.
1,2,4-TRIS(4-FLUOROPHENYL)BENZENE	103.	50. - 150.



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ANALYTICAL REPORT

Laboratory Number: 99-A53035
Sample ID: MW-4A

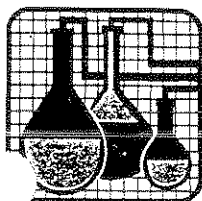
Page 2

Report Approved By:

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Report Date: 4/21/99

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Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director



SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
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Phone 1-615-726-0177

ANALYTICAL REPORT

CHRIEBER & YONLEY, INC. 5314
D SHEPPARD
271 WOLFNER DRIVE
MT. LOUIS, MO 63026

Lab Number: 99-A53036
Sample ID: MW-5A
Sample Type: Water
Site ID:

Project: 980125
Project Name: MARYON INDUSTRIES, INC.
Sampler: HOMER POPE

Date Collected: 4/13/99
Time Collected: 13:50
Date Received: 4/15/99
Time Received: 9:00

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
Benzene	1.4	ug/l	1.0	1.0	1	4/21/99	15:16	F.Gundi	DA-1	8485
Toluene	ND	ug/l	1.0	1.0	1	4/21/99	15:16	F.Gundi	DA-1	8485
Ethylbenzene	ND	ug/l	1.0	1.0	1	4/21/99	15:16	F.Gundi	DA-1	8485
Xylenes, total	2.5	ug/l	1.0	1.0	1	4/21/99	15:16	F.Gundi	DA-1	8485
Methyl-t-butylether	ND	ug/l	1.0	1.0	1	4/21/99	15:16	F.Gundi	DA-1	8485
TPH as Gasoline	850.	ug/l	100.	100.	1	4/21/99	15:16	F.Gundi	DA-1	8485
DA-2 Extractable Petroleum Products										
Mineral Spirits	ND	ug/l	1010	100.	10	4/19/99	1:01	K.Walkup	DA-2	339
Kerosene	ND	ug/l	1010	100.	10	4/19/99	1:01	K.Walkup	DA-2	339
Diesel Fuel	ND	ug/l	1010	100.	10	4/19/99	1:01	K.Walkup	DA-2	339
Fuel Oil	15500	ug/l	1010	100.	10	4/19/99	1:01	K.Walkup	DA-2	339
Motor Oil	ND	ug/l	1010	100.	10	4/19/99	1:01	K.Walkup	DA-2	339
Hydraulic Fluid	ND	ug/l	1010	100.	10	4/19/99	1:01	K.Walkup	DA-2	339

ND = Not detected at the report limit.

Sample Extraction Data

Parameter	Mt/Vol		Date	Analyst	Method
	Extracted	Extract Vol			
EPH	990. ml	1.00 ml	4/16/99	M. Cauthen	3510
DA-1 Sample pH	<2.0				
DA-2 Sample pH	8				

Surrogate	% Recovery	Target Range
Surro-o-Terphenyl	60.	50. - 150.
EX/GRD Surr., a,a,a-trifluorotoluene	100.	50. - 150.



**SPECIALIZED
ASSAYS, INC.**

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A53036
Sample ID: MW-5A

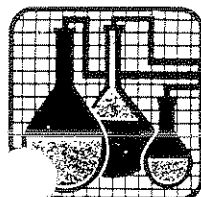
Page 2

Report Approved By: _____

Michael H. Dunn

Report Date: 4/21/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director



SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
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Phone 1-615-726-0177

PROJECT QUALITY CONTROL DATA

Matrix Spike Recovery

Analyte	units	Orig. Val.	MS Val	Spike Conc	Recovery	Target Range	R.C. Batch
Benzene	ng/l	< 0.0010	0.0183	0.0200	92	75. - 125.	8485
Toluene	ng/l	< 0.0010	0.0185	0.0200	92	70. - 125.	8485
Ethylbenzene	ng/l	< 0.0010	0.0210	0.0200	105	71. - 129.	8485
Xylenes, total	ng/l	< 0.0010	0.0390	0.0400	98	71. - 133.	8485
Methyl-t-butylether	ng/l	< 0.0010	0.0176	0.0200	88	75. - 125.	8485
TPH as Gasoline	ng/l	< 0.10	1.17	1.11	105	80. - 120.	8485
Diesel Fuel	ng/l	< 0.10	2.01	2.00	100	52. - 112.	339

Matrix Spike Duplicate

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	R.C. Batch
Benzene	ng/l	0.0183	0.0210	13.74	20.	8485
Toluene	ng/l	0.0185	0.0213	14.07	20.	8485
Ethylbenzene	ng/l	0.0210	0.0200	4.88	20.	8485
Xylenes, total	ng/l	0.0390	0.0440	12.05	20.	8485
Methyl-t-butylether	ng/l	0.0176	0.0210	17.62	20.	8485
TPH as Gasoline	ng/l	1.17	1.13	3.48	20.	8485
Diesel Fuel	ng/l	2.01	1.99	1.00	19.	339

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	R.C. Batch
Benzene	ng/l	0.0200	0.0216	108	70 - 130	8485
Toluene	ng/l	0.0200	0.0213	106	70 - 130	8485
Ethylbenzene	ng/l	0.0200	0.0203	102	70 - 130	8485
Xylenes, total	ng/l	0.0400	0.0449	112	70 - 130	8485
Methyl-t-butylether	ng/l	0.0200	0.0208	104	70 - 130	8485
TPH as Gasoline	ng/l	1.11	1.17	105	70 - 130	8485
Diesel Fuel	ng/l	2.00	2.10	105	70 - 130	339

Blank Data

Analyte	Blank Value	Units	R.C. Batch
Benzene	< 0.0010	ng/l	8485
Toluene	< 0.0010	ng/l	8485
Ethylbenzene	< 0.0010	ng/l	8485
Xylenes, total	< 0.0010	ng/l	8485
Methyl-t-butylether	< 0.0010	ng/l	8485
TPH as Gasoline	< 0.10	ng/l	8485
Mineral Spirits	< 0.10	ng/l	339
Kerosene	< 0.10	ng/l	339
Diesel Fuel	< 0.10	ng/l	339
Fuel Dil	< 0.10	ng/l	339



SPECIALIZED ASSAYS, INC.

2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

SCHRIEBER & YONLEY, INC. 5514
ED SHEPPARD
271 WOLFNER DRIVE
ST. LOUIS, MO 63026

CHAIN OF CUSTODY

Project Number: 980125		Sampler: Homer Pope		Analysis Requested						
Project Name: Maryon Industries, Inc.		SAE Quote:								
Lab No.	Field Number	Date	Time	Matrix	Grab	Comp	Bottles	BTEX	MTBE	TPH
99-A53032	1W-1A	4/13/99	11:30	H ₂ O	X		3	X	X	X
99-A53033	1W-2A	4/13/99	12:10	H ₂ O	X		3	X	X	X
99-A53034	1W-3A	4/13/99	13:00	H ₂ O	X		3	X	X	X
99-A53035	1W-4A	4/13/99	13:30	H ₂ O	X		3	X	X	X
99-A53036	1W-5A	4/13/99	13:50	H ₂ O	X		3	X	X	X
Relinquished by: 4/14/99 11:00 Received by: D/T Relinquished by: D/T Received by:										
Relinquished by: D/T Received by: D/T Relinquished by: D/T Received by: <i>mtmBd</i> 4/14										
Cooler Temperature When Received: 4°C SPECIAL INSTRUCTIONS:										
Laboratory Project Number: 139106										
For an SAE Inter?										
Fed-Air Bill Number:										

UNDERGROUND STORAGE TANK UNIT FACILITY INFORMATION REPORT

FACILITY ID:

OWNER ID:

DATE REC.:	NAME AND ADDRESS	CONTACT AND PHONE:	CONTACT TITLE:	REGISTRATION FEE CYCLE
ST0013618	WEST LAKE QUARRY & MATERIAL CO	ROBERT COX	SAFETY ENG	10/01/1995 09/30/2003
OW10412	13570 ST CHARLES ROCK ROAD	(314)739-1122		
04/14/1986	BRIDGETON, MO 63044			
	ST LOUIS COUNTY COUNTY	REGION: SL	LATITUDE: 38 46 39 LONGITUDE: 90 27 3	

SIGNER: W.E. WHITAKER

TITLE: SAFETY ENG

DNR

TANK ID:	TANK TYPE:	STATUS:	CAPACITY:	SUBSTANCE:	TANK MATERIAL:	DATE INSTALLED:	DATE CLOSED:	Fees Paid	MEET 98:
1	BELOW	REMOVED	2,000	GASOLINE	STEEL	01/01/1982	/ /	0	NO
2	BELOW	REMOVED	10,000	GASOLINE	STEEL	01/01/1981	/ /	0	NO
3	BELOW	REMOVED	10,000	DIESEL	STEEL	01/01/1978	/ /	0	NO
4	BELOW	REMOVED	10,800	DIESEL	STEEL	01/01/1972	/ /	0	NO
5	BELOW	REMOVED	10,000	DIESEL	STEEL	01/01/1972	/ /	0	NO
6	BELOW	REMOVED	10,000	DIESEL	STEEL	01/01/1977	/ /	0	NO
7	BELOW	REMOVED	10,000	DIESEL	STEEL	01/01/1960	/ /	0	NO
8	BELOW	REMOVED	1,000	USED OIL	STEEL	01/01/1972	/ /	0	NO
9	BELOW	REMOVED	10,000	P.ASPHALT	STEEL	01/01/1962	05/18/1990	0	NO
10	BELOW	REMOVED	10,000	P.ASPHALT	STEEL	01/01/1962	05/18/1990	0	NO
11	BELOW	REMOVED	10,000	DIESEL	STEEL	01/01/1968	/ /	0	NO

COPY

03/22/1999

ust:facility

UNDERGROUND STORAGE TANK UNIT FACILITY INFORMATION REPORT

FACILITY ID: .

OWNER ID:

DATE REC.:	NAME AND ADDRESS	CONTACT AND PHONE:	CONTACT TITLE:	REGISTRATION FEE CYCLE
ST0013618	WEST LAKE QUARRY & MATERIAL CO	ROBERT COX	SAFETY ENG	10/01/1995 09/30/2003
OW10412	13570 ST CHARLES ROCK ROAD	(314)739-1122		
04/14/1986	BRIDGETON, MO 63044			
	ST LOUIS COUNTY COUNTY	REGION: SL	LATITUDE: 38 46 39 LONGITUDE: 90 27 3	

SIGNER: W.E. WHITAKER

TITLE: SAFETY ENG

DNR

TANK ID:	TANK TYPE:	STATUS:	CAPACITY:	SUBSTANCE:	TANK MATERIAL:	DATE INSTALLED:	DATE CLOSED:	Fees Paid	MEET 98:
1	BELOW	REMOVED	2,000	GASOLINE	STEEL	/ /	/ /	0	NO
2	BELOW	REMOVED	10,000	GASOLINE	STEEL	/ /	/ /	0	NO
3	BELOW	REMOVED	10,000	DIESEL	STEEL	/ /	/ /	0	NO
4	BELOW	REMOVED	10,800	DIESEL	STEEL	/ /	/ /	0	NO
5	BELOW	REMOVED	10,000	DIESEL	STEEL	/ /	/ /	0	NO
6	BELOW	REMOVED	10,000	DIESEL	STEEL	/ /	/ /	0	NO
7	BELOW	REMOVED	10,000	DIESEL	STEEL	/ /	/ /	0	NO
8	BELOW	REMOVED	1,000		STEEL	/ /	/ /	0	NO
9	BELOW	REMOVED	10,000	P.ASPHALT	STEEL	/ /	05/17/1990	0	NO
10	BELOW	REMOVED	10,000	P.ASPHALT	STEEL	/ /	/ /	0	NO
11	BELOW	TEMP. OUT OF SERVICE	10,000	DIESEL	STEEL	/ /	/ /	0	NO

COPY

DEPARTMENT OF NATURAL RESOURCES
Division of Environmental Quality

TELEPHONE OR CONFERENCE RECORD

File ST13618/R3874 Date 03/10/99

TELEPHONE

Incoming (314) 426-3091

CONFERENCE

Office ()

SUBJECT Missing closure report in DNR file drawer

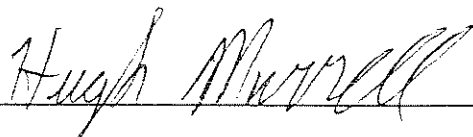
PERSONS INVOLVED

Name	Representing
<u>Hugh Murrell</u>	<u>MDNR</u>
<u>Mr. Bill Whitaker</u>	<u>Westlake Quarry</u>

SUMMARY OF CONVERSATION

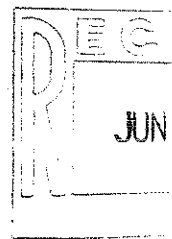
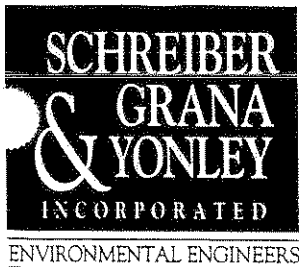
Mr. Whitaker returned my call regarding the missing closure report. He told me there are no longer any USTs at his site. He then indicated that Maryon Industries, Inc is the responsible party for the ongoing remediation of a diesel leak. He said his site is inside of a landfill and that Schreiber, Grana, & Yonley are the contractors. I had called them earlier and they didn't know anything about a closure report and referred me to Mr. Whitaker.

FINAL RESULTS



Hugh Murrell
Environmental Specialist
HWP - UST Unit

C: St. Louis Regional Office



271 Wolfner Drive ■ Saint Louis, Missouri 63026
314/349-8399 ■ Fax 314/349-8384

June 21, 1995

Mr. Dave Bellamy
Missouri Department of Natural Resources
Environmental Services Program
Leaking Underground Storage Tank Unit
P.O. Box 176
Jefferson City, MO 65102

RE: Maryon Industries, Inc.
Westlake Asphalt Plant
UST - #7 (MDNR #11)
Bridgeton, Missouri
LU #3874

Dear Mr. Bellamy:

At the request of Maryon Industries, Inc., Schreiber, Grana & Yonley, Inc. is submitting this letter to notify the Missouri Department of Natural Resources (MDNR) of the additional investigatory activities at the above-referenced site.

The investigatory activities were performed in accordance with the Schreiber, Grana & Yonley, Inc. "Subsurface Environmental Site Investigation Workplan" (Workplan) dated October 12, 1994. The Workplan was submitted to MDNR and was subsequently approved by MDNR on November 22, 1994.

On March 24, 1995, one (1) additional soil boring, MW-5A, was advanced/sampled to an approximate depth of 32.5' (see Attachment A for boring/monitoring well locations). Two (2) soil samples were collected and submitted to Specialized Assays Environmental, Nashville, Tennessee, for chemical analyses of benzene, toluene, ethylbenzene and xylenes (BTEX) in accordance with EPA Method 8020, and total petroleum hydrocarbons (TPH) in accordance with EPA Method 418.1 (see Attachment B for soil boring logs and well completion forms for MW-1A through MW-5, and Attachment C for a soil analytical results summary and map). Utilizing the MDNR "Leaking Underground Storage Tank Soil Cleanup Guidelines," it is anticipated that the cleanup objectives for BTEX will be 1/5/10/10 ppm, respectively, and TPH will be 200 ppm (see Attachment D for completed chart). The MDNR soil cleanup objective for TPH was exceeded in one (1) sample from MW-5A. Upon completion of the soil boring, a monitoring well was installed. Additional information pertaining to monitoring wells MW-1A through MW-4A was previously submitted to MDNR in a letter dated January 11, 1995.



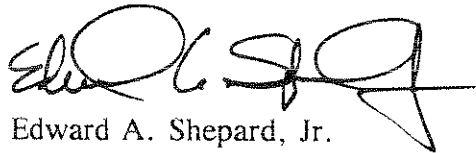
Mr. Bellamy
Page 2
June 21, 1995

Following installation, monitoring well MW-5A was gauged, developed and sampled. Monitoring wells MW-1A through MW-4A were also gauged and sampled. Data gathered from the gauging events was utilized to determine the amount of water to be evacuated from the monitoring wells for the development and sampling events, and to estimate the groundwater flow direction (see Attachment E for a groundwater elevation map). One (1) groundwater sample per monitoring well was collected and submitted to Specialized Assays Environmental, Nashville, Tennessee, for chemical analyses of BTEX in accordance with EPA Method 8020, and TPH in accordance with EPA Method 418.1 (see Attachment F for a groundwater analytical results summary and map). Utilizing the MDNR "Underground Storage Tank Closure Guidance Document," dated January 1992, it was determined that non-potable groundwater cleanup objectives for BTEX are .050/.150/.320/.320 ppm, respectively; total BTEX is .750 ppm; and TPH is 10 ppm. The cleanup objective for TPH was exceeded in the samples collected from MW-1A and MW-4A.

Should you have any questions or comments, please do not hesitate to contact me at (314)349-8399. Thank you for your time regarding this matter.

Sincerely,

SCHREIBER, GRANA & YONLEY, INC.



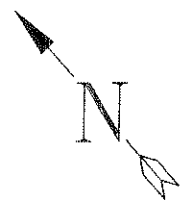
Edward A. Shepard, Jr.
Associate Engineer

EAS/ccp

Encl.

mii\953483\summary.ltr

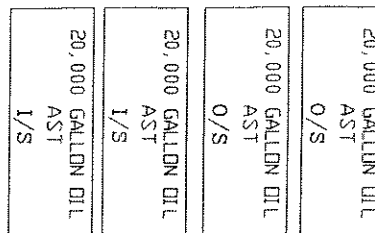
ATTACHMENT A
BORING/MONITORING WELL LOCATION MAP



MW-4A

FORMER
10,000 GALLON
UST

MW-3A



MW-5A

BOILER
SHED

MW-1A

SUPPLY
LINES


2000 GALLON
DIESEL AST

ASPHALT
BATCH
PLANT

MW-2A

SCALE
HOUSE

EXPLANATION

-  MONITORING WELL
- AST ABOVEGROUND STORAGE TANK
- I/S IN SERVICE
- O/S OUT OF SERVICE
- UST UNDERGROUND STORAGE TANK

MONITORING WELL LOCATION MAP

MARYON INDUSTRIES, INC.
WESTLAKE SITE
BRIDGETON, MISSOURI

ATTACHMENT A

SCALE:
1"=20'

DWG. #
MII01-1

SCHREIBER
& GRANA
& YONLEY
INCORPORATED
ENVIRONMENTAL ENGINEERS

ATTACHMENT B

**SOIL BORING LOGS AND
MONITORING WELL COMPLETION FORMS**

LOG OF TEST BORING

Client: Maryon Industries, Inc.		Project No.: MII02	Boring No.: MW-1A
Project: Westlake Asphalt Plant Site		Page No.: 1 of 2	
Location: Bridgeton, Missouri		Start Date: 10/31/94	
Surface Elev:	Casing Elev:	Completion Date: 10/31/94	
Drilling Contractor: Roberts Environmental Drilling, Inc.		Sample Method(s): Split Spoon	
Drilling Rig: CME-55		Hole Diameter(s): 8.25"	Total Depth: 35'
Initial Water Level:		Inspector(s): EAS	
Static Water Level:			

Depth Below Surface	Sample/ Run No. Interval	N	% Rec. RQD	PID/ FID (MDU)	Description of Materials/Remarks	Moisture	Soil Class
-	SS-1		100	0	Rock Fill	Dry	GW
-2							
-	SS-2		100	0	s.a.a.	Dry	GW
-4							
-	SS-3		100	103	Greenish gray silty CLAY w/varying amounts of rock, medium-stiff	Damp	CL
-	SS-4		100	57.3	s.a.a.	Damp	CL
-8							
-	SS-5		10	44.1	s.a.a.	Damp	CL
-10							
-	SS-6		60	23.4	Gray clayey SILT w/varying amounts of rock, medium-stiff, petroleum odor	Damp	ML
-12							
-	SS-7		50	122	s.a.a.	Damp	ML
-14							
-	SS-8		75	270	s.a.a., strong petroleum odor, sample #1	Moist	ML
-16							
-	SS-9		75	65.7	s.a.a.	Damp	ML
-18							
-	SS-10		100	1.5	Brown clayey SILT, medium	Damp	ML
-20							

Notes: MDU - Meter Deflection Units
s.a.a. - same as above

LOG OF TEST BORING

Client: Maryon Industries, Inc.				Project No.: MII02		Boring No.: MW-1A	
Project: Westlake Asphalt Plant Site						Page No.: 2 of 2	
Location: Bridgeton, Missouri				Start Date: 10/31/94			
Surface Elev:		Casing Elev:		Completion Date: 10/31/94			
Drilling Contractor: Roberts Environmental Drilling, Inc.				Sample Method(s): Split Spoon			
Drilling Rig: CME-55				Hole Diameter(s): 8.25"		Total Depth: 35'	
Initial Water Level:				Inspector(s): EAS			
Static Water Level:							

Depth Below Surface	Sample/ Run No. Interval	N	% Rec. RQD	PID/ FID (MDU)	Description of Materials/Remarks	Moisture	Soil Class
-	SS-11		100	0	s.a.a.	Damp	ML
-22							
-	SS-12		100	0	Dark gray clayey SILT, medium	Damp	ML
-24							
-	SS-13		100	4.6	s.a.a.	Damp	ML
-							
-	SS-14		100	15.4	s.a.a.	Moist	ML
-28							
-	SS-15		100	294	s.a.a., strong petroleum odor, sample #2	Wet	ML
-30							
-	SS-16		100	0	s.a.a., w/some sand	Wet	ML
-32							
-	SS-17		25	0	Dark gray silty SAND	Wet	SM
-34							
-					Boring terminated @ 35'		
-							
-							
-							
-							
-							

Notes: MDU - Meter Deflection Units
s.a.a. - same as above

LOG OF TEST BORING

Client: Maryon Industries, Inc.		Project No.: MII02	Boring No.: MW-2A
Project: Westlake Asphalt Plant Site		Page No.: 1 of 2	
Location: Bridgeton, Missouri		Start Date: 10/31/94	
Surface Elev:	Casing Elev:	Completion Date: 11/01/94	
Drilling Contractor: Roberts Environmental Drilling, Inc.		Sample Method(s): Split Spoon	
Drilling Rig: CME-55		Hole Diameter(s): 8.25"	Total Depth: 35'
Initial Water Level:		Inspector(s): EAS	
Static Water Level:			

Depth Below Surface	Sample/ Run No. Interval	N	% Rec. RQD	PID/ FID (MDU)	Description of Materials/Remarks	Moisture	Soil Class
-	SS-1		0	NA	Rock fill	Dry	GW
-2							
-	SS-2		0	NA	s.a.a.	Dry	GW
-4							
-	SS-3		75	0	Gray clayey SILT, medium	Moist	ML
-							
-	SS-4		75	0	Brown silty SAND	Wet	SM
-8							
-	SS-5		0	NA	s.a.a.	--	--
-10							
-	SS-6		100	0	s.a.a.	Wet	SM
-12							
-	SS-7		50	0	s.a.a.	Wet	SM
-14							
-	SS-8		100	0	s.a.a.	Wet	SM
-16							
-	SS-9		10	0	s.a.a.	Wet	SM
-18							
-	SS-10		90	0	Dark gray clayey SILT, medium-still, sample #1	Moist	ML
-20							

Notes: MDU - Meter Deflection Units
s.a.a. - same as above
NA - not analyzed

LOG OF TEST BORING

Client: Maryon Industries, Inc.		Project No.: MII02	Boring No.: MW-2A
Project: Westlake Asphalt Plant Site		Page No.: 2 of 2	
Location: Bridgeton, Missouri		Start Date: 10/31/94	
Surface Elev:	Casing Elev:	Completion Date: 11/01/94	
Drilling Contractor: Roberts Environmental Drilling, Inc.		Sample Method(s): Split Spoon	
Drilling Rig: CME-55		Hole Diameter(s): 8.25"	Total Depth: 35'
Initial Water Level:		Inspector(s): EAS	
Static Water Level:			

Depth Below Surface	Sample/ Run No. Interval	N	% Rec. RQD	PID/ FID (MDU)	Description of Materials/Remarks	Moisture	Soil Class
-	SS-11		90	0	s.a.a.	Damp	ML
-22							
-	SS-12		90	0	s.a.a.	Damp	ML
-24							
-	SS-13		100	0	s.a.a.	Damp	ML
-	SS-14		100	16.4	s.a.a., becoming sandy w/depth	Moist	ML
-28							
-	SS-15		100	0	Dark gray silty SAND, sample #2	Wet	SM
-30							
-	SS-16		50	0	s.a.a.	Wet	SM
-32							
-	SS-17		50	0	s.a.a., w/clay lumps	Wet	SM
-34							
					Boring terminated @ 35'		

Notes: MDU - Meter Deflection Units
s.a.a. - same as above

LOG OF TEST BORING

Client: Maryon Industries, Inc.		Project No.: MII02	Boring No.: MW-3A
Project: Westlake Asphalt Plant Site		Page No.: 1 of 2	
Location: Bridgeton, Missouri		Start Date: 11/01/94	
Surface Elev:	Casing Elev:	Completion Date: 11/01/94	
Drilling Contractor: Roberts Environmental Drilling, Inc.		Sample Method(s): Split Spoon	
Drilling Rig: CME-55		Hole Diameter(s): 8.25"	Total Depth: 35'
Initial Water Level:		Inspector(s): EAS	
Static Water Level:			

Depth Below Surface	Sample/ Run No. Interval	N	% Rec. RQD	PID/ FID (MDU)	Description of Materials/Remarks	Moisture	Soil Class
-	SS-1		0	NA	Rock fill	Dry	GW
-2							
-	SS-2		0	NA	s.a.a.	Dry	GW
-4							
-	SS-3		0	NA	s.a.a.	Dry	GW
-							
-	SS-4		25	0	Brown, gray silty CLAY w/varying amounts of rock, stiff	Dry	CL
-8							
-	SS-5		25	4.0	s.a.a.	Damp	CL
-10							
-	SS-6		60	3.2	s.a.a.	Damp	CL
-12							
-	SS-7		10	0	s.a.a.	Damp	CL
-14							
-	SS-8		90	3.5	Dark gray silty CLAY w/varying amounts of rock, stiff-very stiff	Damp	CL
-16							
-	SS-9		50	1.0	s.a.a.	Damp	CL
-18							
-	SS-10		100	2.4	s.a.a.	Damp	CL
-20							

Notes: MDU - Meter Deflection Units
s.a.a. - same as above
NA - not analyzed

LOG OF TEST BORING

Client: Maryon Industries, Inc.		Project No.: MII02	Boring No.: MW-3A
Project: Westlake Asphalt Plant Site		Page No.: 2 of 2	
Location: Bridgeton, Missouri		Start Date: 11/01/94	
Surface Elev:	Casing Elev:	Completion Date: 11/01/94	
Drilling Contractor: Roberts Environmental Drilling, Inc.		Sample Method(s): Split Spoon	
Drilling Rig: CME-55		Hole Diameter(s): 8.25"	Total Depth: 35'
Initial Water Level:		Inspector(s): EAS	
Static Water Level:			

Depth Below Surface	Sample/ Run No. Interval	N	% Rec. RQD	PID/ FID (MDU)	Description of Materials/Remarks	Moisture	Soil Class
-	SS-11		100	1.1	s.a.a., sample #1	Damp	CL
-22							
-	SS-12		100	1.3	s.a.a.	Damp	CL
-24							
-	SS-13		100	15.6	Dark gray clayey SILT, medium-stiff	Moist	ML
-							
-	SS-14		60	4.7	s.a.a.	Moist	ML
-28							
-	SS-15		75	0	Dark gray silty SAND	Wet	SM
-30							
-	SS-16		75	0	s.a.a.	Wet	SM
-32							
-	SS-17		10	0	s.a.a.	Wet	SM
-34							
					Boring terminated @ 35'		
-							
-							
-							
-							
-							
-							
-							

Notes: MDU - Meter Deflection Units
s.a.a. - same as above

LOG OF TEST BORING

Client: Maryon Industries, Inc.		Project No.: MII02	Boring No.: MW-4A
Project: Westlake Asphalt Plant Site		Page No.: 1 of 2	
Location: Bridgeton, Missouri		Start Date: 11/02/94	
Surface Elev:	Casing Elev:	Completion Date: 11/02/94	
Drilling Contractor: Roberts Environmental Drilling, Inc.		Sample Method(s): Split Spoon	
Drilling Rig: CME-55		Hole Diameter(s): 8.25"	Total Depth: 35'
Initial Water Level:		Inspector(s): EAS	
Static Water Level:			

Depth Below Surface	Sample/ Run No. Interval	N	% Rec. RQD	PID/ FID (MDU)	Description of Materials/Remarks	Moisture	Soil Class
-	SS-1		0	NA	Rock fill	Dry	GW
-2							
-	SS-2		0	NA	s.a.a.	Dry	GW
-4							
-	SS-3		0	NA	s.a.a.	Dry	GW
-							
-	SS-4		10	0	s.a.a.	Damp	GW
-8							
-	SS-5		10	0	s.a.a.	Damp	GW
-10							
-	SS-6		60	0	Dark gray clayey SILT w/increasing amount of debris (wood, ash, etc.)	Moist	ML
-12							
-	SS-7		5	0	s.a.a.	Moist	ML
-14							
-	SS-8		50	0	s.a.a., approximately 10" piece of wood in spoon	Moist	ML
-16							
-	SS-9		40	0	Fill (appears to be wood) and debris	Wet	
-18							
-	SS-10		40	0	s.a.a.	Wet	
-20							

Notes: MDU - Meter Deflection Units
s.a.a. - same as above
NA - not analyzed

LOG OF TEST BORING

Client: Maryon Industries, Inc.		Project No.: MII02	Boring No.: MW-4A
Project: Westlake Asphalt Plant Site		Page No.: 2 of 2	
Location: Bridgeton, Missouri		Start Date: 11/02/94	
Surface Elev:	Casing Elev:	Completion Date: 11/02/94	
Drilling Contractor: Roberts Environmental Drilling, Inc.		Sample Method(s): Split Spoon	
Drilling Rig: CME-55		Hole Diameter(s): 8.25"	Total Depth: 35'
Initial Water Level:		Inspector(s): EAS	
Static Water Level:			

Depth Below Surface	Sample/ Run No. Interval	N	% Rec. RQD	PID/ FID (MDU)	Description of Materials/Remarks	Moisture	Soil Class
-	SS-11		50	0	Dark gray clayey SILT becoming sandy w/depth, medium	Damp	ML
-22							
-	SS-12		100	0	s.a.a., sample #1	Damp	ML
-24							
-	SS-13		100	0	s.a.a.	Damp	ML
-5							
-	SS-14		80	0	s.a.a., larger amount of sand	Damp	ML
-28							
-	SS-15		100	0	Dark gray silty SAND	Moist	SM
-30							
-	SS-16		100	824	s.a.a., sample #2	Wet	SM
-32							
-	SS-17		50	0	s.a.a.	Wet	SM
-34							
-					Boring terminated @ 35'		
-							
-							
-							
-							
-							

Notes: MDU - Meter Deflection Units
s.a.a. - same as above

LOG OF TEST BORING

Client: Maryon Industries, Inc.		Project No.: MII02	Boring No.: MW-5A
Project: Westlake Asphalt Plant Site		Page No.: 1 of 2	
Location: Bridgeton, Missouri		Start Date: 03/24/95	
Surface Elev:	Casing Elev:	Completion Date: 03/24/95	
Drilling Contractor: Roberts Environmental Drilling, Inc.		Sample Method(s): Split Spoon	
Drilling Rig: CME-55		Hole Diameter(s): 8.25"	Total Depth: 32.5'
Initial Water Level:		Inspector(s): CEF	
Static Water Level:			

Depth Below Surface	Sample/ Run No. Interval	N	% Rec. RQD	PID/ FID (MDU)	Description of Materials/Remarks	Moisture	Soil Class
-	SS-1		0	0	Rock fill	Dry	GW
-2							
-	SS-2		20	4.6	s.a.a.	Dry	GW
-4							
-	SS-3		10	5.4	s.a.a.	Dry	GW
-							
-	SS-4		60	19.9	Brown gray silty CLAY w/varying amounts of rock, stiff	Dry	CL
-8							
-	SS-5		70	7.5	s.a.a.	Dry	CL
-10							
-	SS-6		80	7.8	Gray, brown clayey SILT w/varying amounts of rock, stiff to very stiff	Damp	ML
-12							
-	SS-7		50	116	s.a.a., sample #1	Damp	ML
-14							
-	SS-8		60	17.0	s.a.a.	Damp	ML
-16							
-	SS-9		5	8.6	Brown gray silty CLAY w/varying amounts of rock, stiff	Damp	CL
-18							
-	SS-10		10	10.4	s.a.a.	Damp	CL
-20							

Notes: MDU - Meter Deflection Units
s.a.a. - same as above

LOG OF TEST BORING

Client: Maryon Industries, Inc.		Project No.: MII02	Boring No.: MW-5A
Project: Westlake Asphalt Plant Site		Page No.: 2 of 2	
Location: Bridgeton, Missouri		Start Date: 03/24/95	
Surface Elev:	Casing Elev:	Completion Date: 03/24/95	
Drilling Contractor: Roberts Environmental Drilling, Inc.		Sample Method(s): Split Spoon	
Drilling Rig: CME-55		Hole Diameter(s): 8.25"	Total Depth: 32.5'
Initial Water Level:		Inspector(s): CEF	
Static Water Level:			

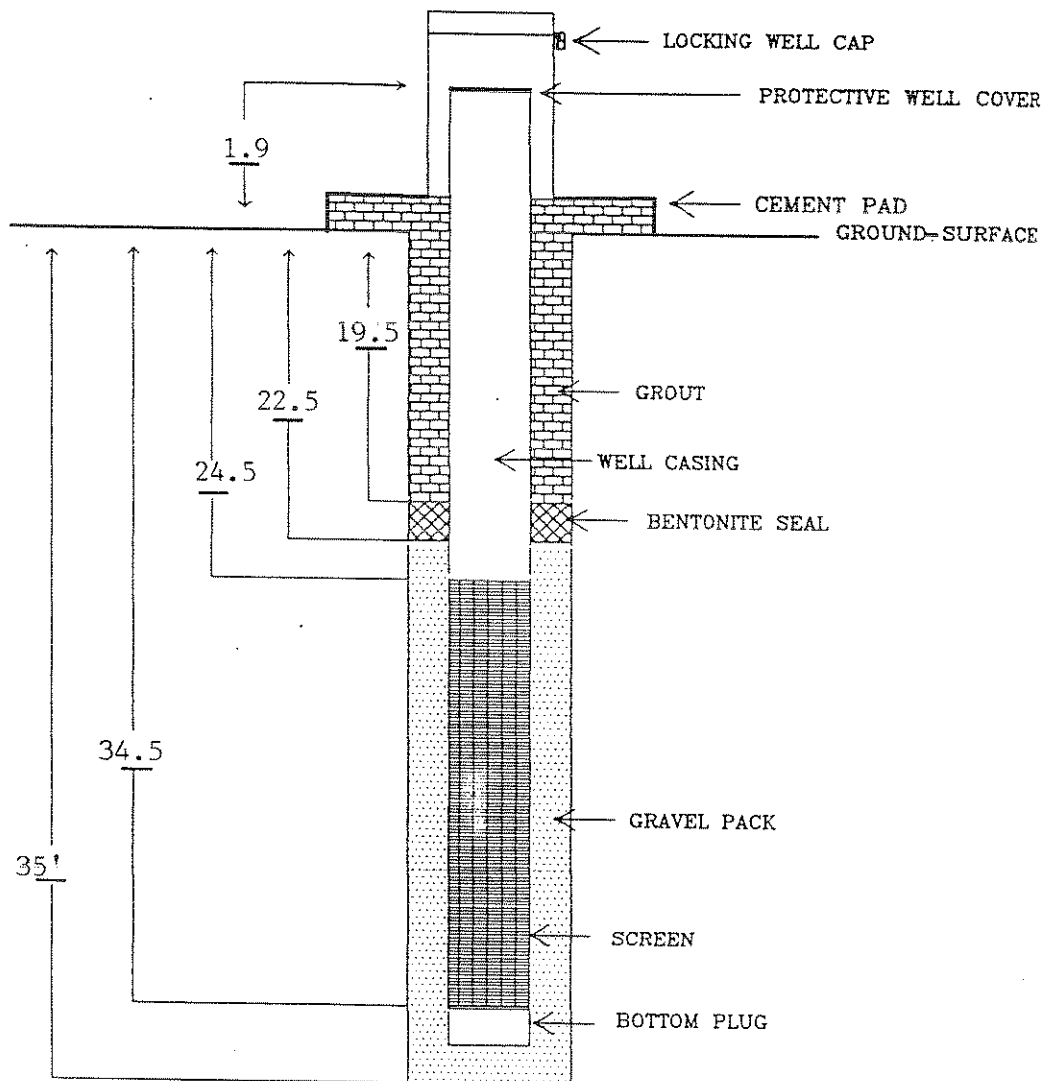
Depth Below Surface	Sample/ Run No. Interval	N	% Rec. RQD	PID/ FID (MDU)	Description of Materials/Remarks	Moisture	Soil Class
-	SS-11		30	9.7	s.a.a.	Damp	CL
-22							
-	SS-12		90	5.7	Dark gray clayey SILT, medium	Damp	ML
-24							
-	SS-13		90	2.8	s.a.a.	Damp	ML
-							
-	SS-14		80	5.6	s.a.a., becoming sand	Moist	ML
-28							
-	SS-15		90	1.9	s.a.a.	Wet	ML
-30							
-	SS-16		80	3.2	Dark gray silty SAND	Wet	SM
-32					Boring terminated @ 32.5'		
-							
-							
-							
-							
-							
-							
-							
-							

Notes: MDU - Meter Deflection Units
s.a.a. - same as above

SCHREIBER GRANA & YONLEY, INC.

WELL COMPLETION FORM

OBJECT: Maryon Industries, Inc.		CONTRACTORS: Roberts Environmental Drilling	
ADDRESS: 13570 St. Charles Rock Road		PROJECT MANAGER: EAS	
SG&Y PROJECT #: MII02		DATE INSTALLED: 11/01/94	
BORING #: MW-1A		ELEVATION - SURFACE: CASING: 100.34	
CASING LENGTH: 26.4'	DIAMETER: 2"	SCREEN LENGTH: 10'	DIAMETER:
CASING MATERIAL: PVC		SCREEN MATERIAL: PVC	
JOINT TYPE: Threaded		SCREEN TYPE: Slotted SIZE: .010"	
FILTER PACK TYPE: Sand	SIZE: WB-40	BENTONITE SEAL THICKNESS: 3'	
WATER LEVEL BEFORE: 33.11 AFTER DEVELOPMENT		DEVELOPMENT METHOD: Hand Bail	

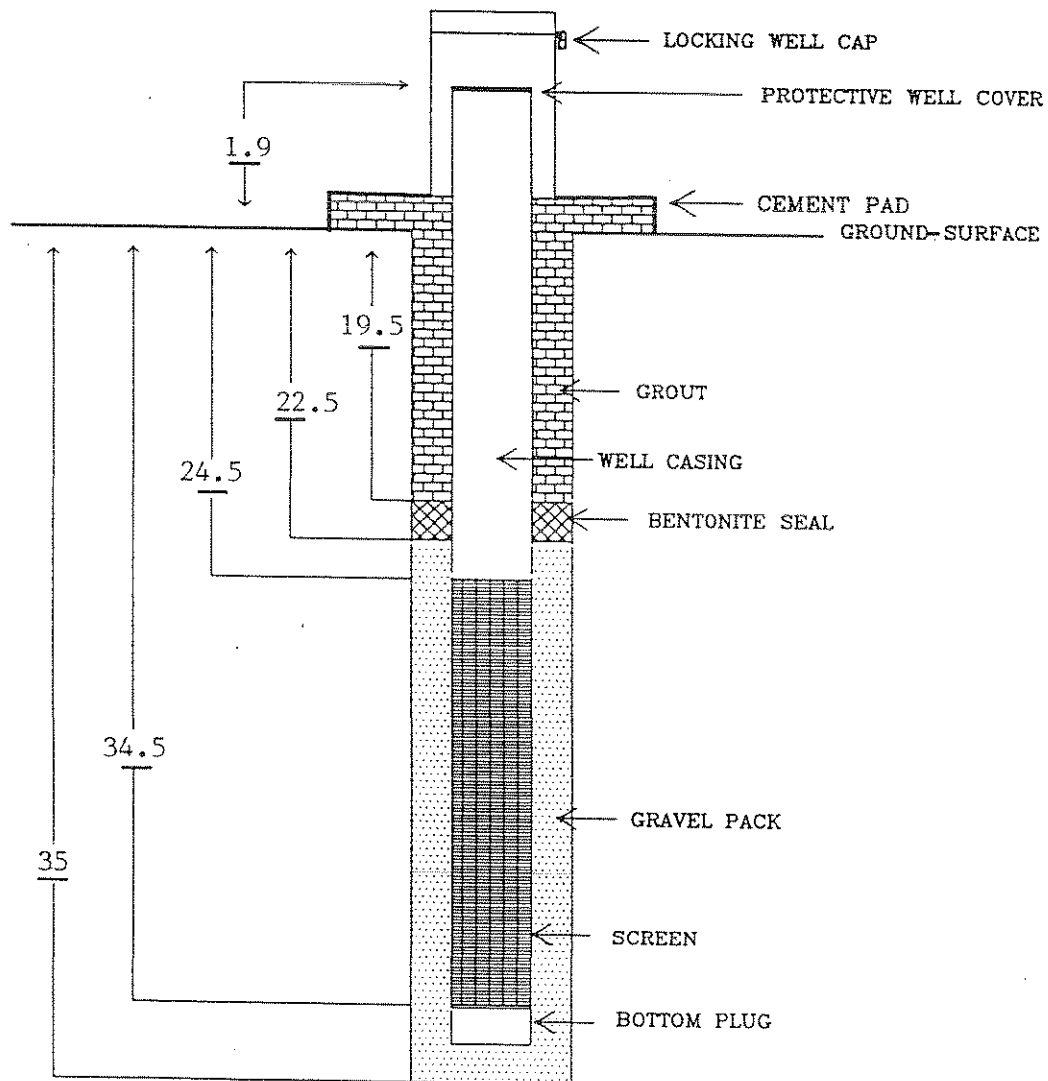


LOCATION In front of boiler building

SCHREIBER GRANA & YONLEY, INC.

WELL COMPLETION FORM

OBJECT: Maryon Industries, Inc.		CONTRACTORS: Roberts Environmental Drilling	
ADDRESS: 13570 St. Charles Rock Road		PROJECT MANAGER: EAS	
SG&Y PROJECT #: MII02		DATE INSTALLED: 11/01/94	
BORING #: MW-2A		ELEVATION - SURFACE: CASING: 99.14	
CASING LENGTH: 26.4	DIAMETER: 2"	SCREEN LENGTH: 10'	DIAMETER:
CASING MATERIAL: PVC		SCREEN MATERIAL: PVC	
JOINT TYPE: Threaded		SCREEN TYPE: Slotted SIZE: .010"	
FILTER PACK TYPE: Sand	SIZE: WB-40	BENTONITE SEAL THICKNESS: 3'	
WATER LEVEL BEFORE: 33.11 AFTER DEVELOPMENT		DEVELOPMENT METHOD: Hand Bail	

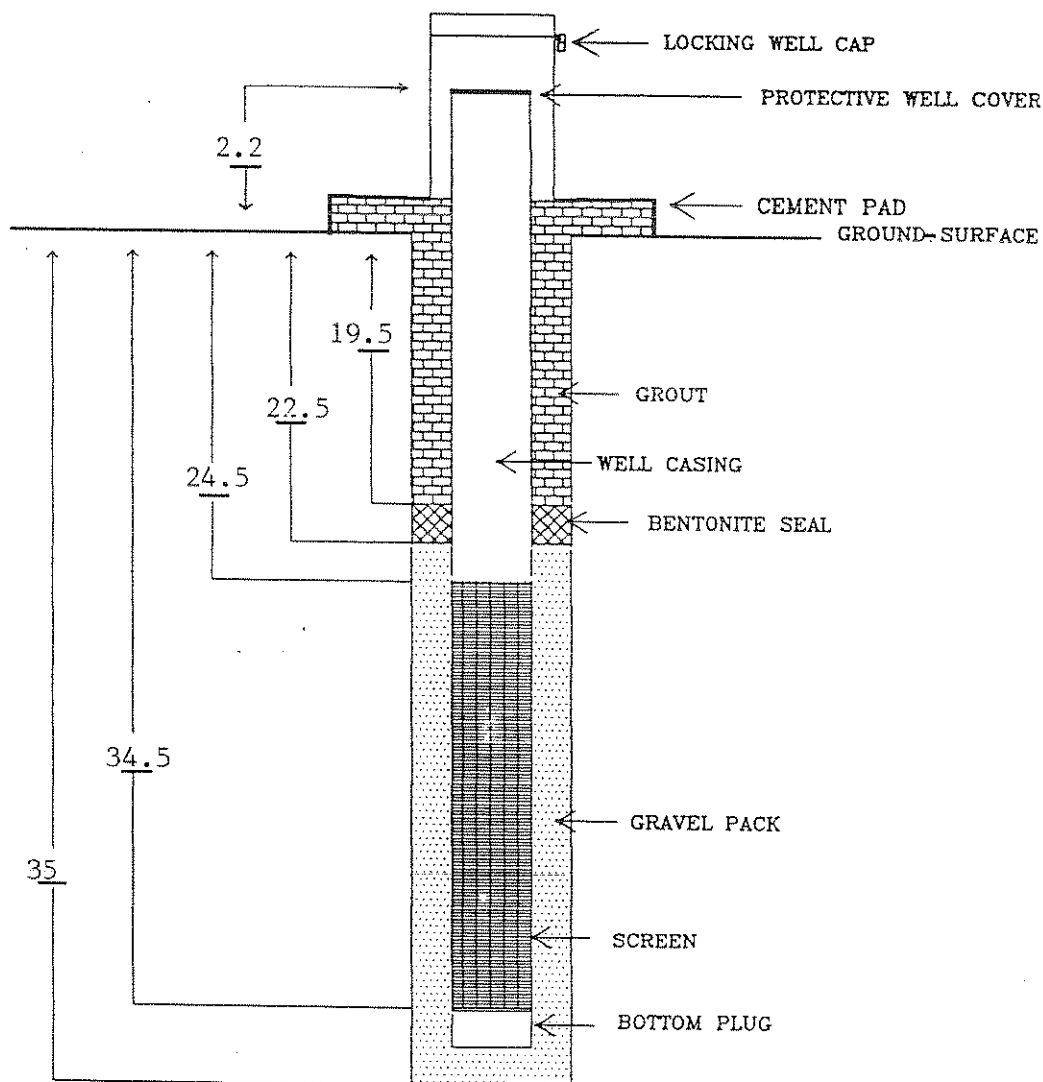


LOCATION Located at base of mineral filler bin

SCHREIBER GRANA & YONLEY, INC.

WELL COMPLETION FORM

PROJECT: Maryon Industries, Inc.		CONTRACTORS: Roberts Environmental Drilling	
ADDRESS: 13570 St. Charles Rock Road		PROJECT MANAGER: EAS	
SG&Y PROJECT #: MII02		DATE INSTALLED: 11/01/94	
BORING #: MW-3A		ELEVATION - SURFACE: CASING: 99.31	
CASING LENGTH: 26.7	DIAMETER: 2"	SCREEN LENGTH: 10'	DIAMETER:
CASING MATERIAL: PVC		SCREEN MATERIAL: PVC	
JOINT TYPE: Threaded		SCREEN TYPE: Slotted SIZE: .010"	
FILTER PACK TYPE: Sand	SIZE: WB-40	BENTONITE SEAL THICKNESS: 3'	
WATER LEVEL BEFORE: 33.25 AFTER DEVELOPMENT		DEVELOPMENT METHOD: Hand Bail	

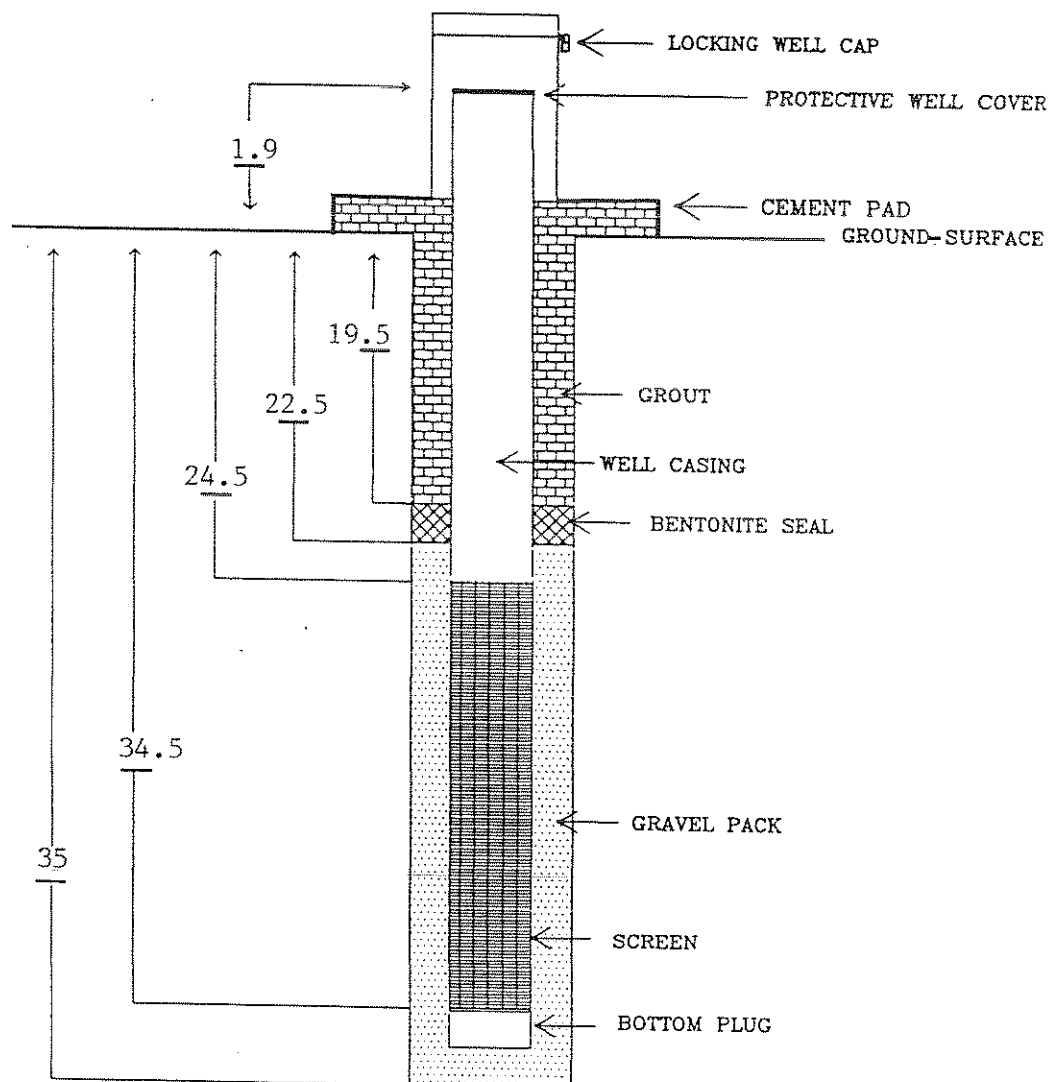


LOCATION Base of scrubber stack

SCHREIBER GRANA & YONLEY, INC.

WELL COMPLETION FORM

CLIENT: Maryon Industries, Inc. ADDRESS: 13570 St. Charles Rock Road SG&Y PROJECT #: MII02 BORING #: MW-4A CASING LENGTH: 26.4 DIAMETER: 2" CASING MATERIAL: PVC JOINT TYPE: Threaded FILTER PACK TYPE: Sand SIZE: WB-40 WATER LEVEL BEFORE: 34.02 AFTER DEVELOPMENT	CONTRACTORS: Roberts Environmental Drilling PROJECT MANAGER: EAS DATE INSTALLED: 11/02/94 ELEVATION - SURFACE: CASING: 100.0 SCREEN LENGTH: 10' DIAMETER: SCREEN MATERIAL: PVC SCREEN TYPE: Slotted SIZE: .010" BENTONITE SEAL THICKNESS: 3' DEVELOPMENT METHOD: Hand Bail
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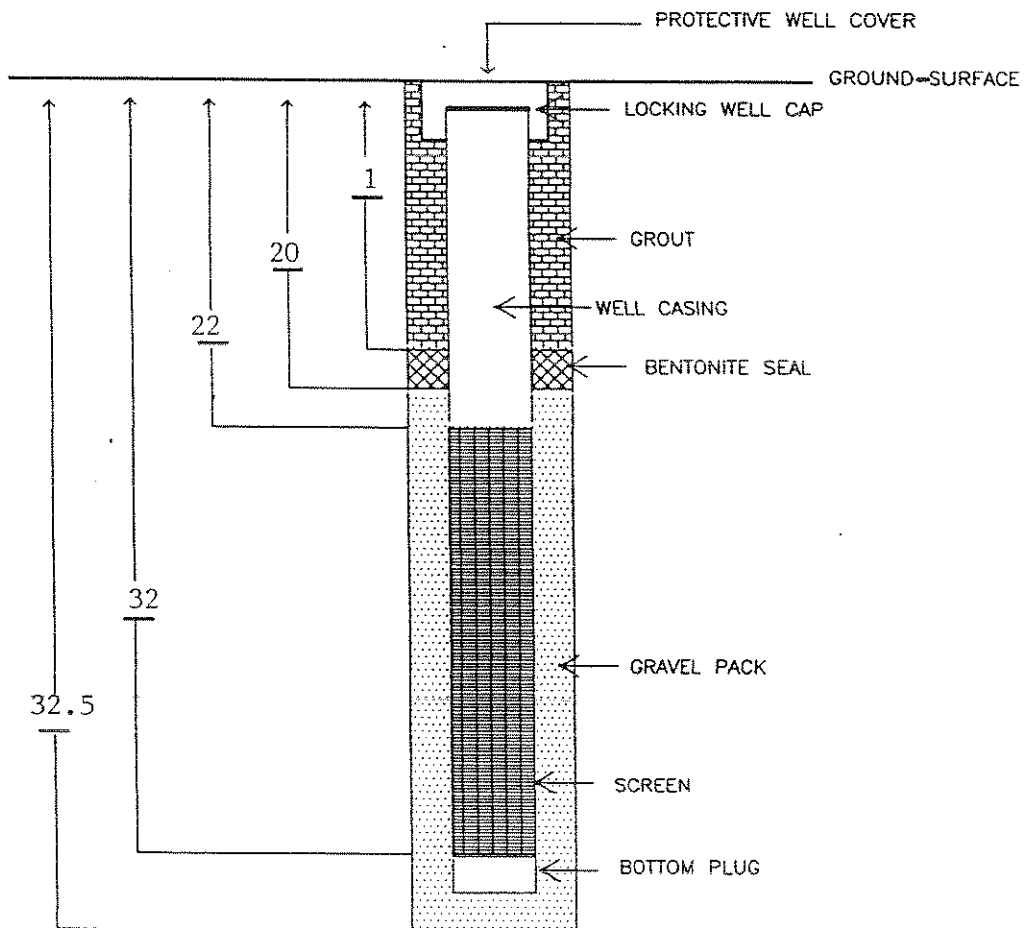


LOCATION North side of tank farm

SCHREIBER GRANA & YONLEY, INC.

WELL COMPLETION FORM

PROJECT: Maryon Industries, Inc.		CONTRACTORS: Roberts Environmental Drilling	
ADDRESS: 13570 St. Charles Rock Road		PROJECT MANAGER: CEF	
SG&Y PROJECT #: 953483		DATE INSTALLED: 3/24/95	
BORING #: MW-5A		ELEVATION - SURFACE: CASING: 98.22	
CASING LENGTH: 22.0	DIAMETER: 2"	SCREEN LENGTH: 10'	DIAMETER: 2"
CASING MATERIAL: PVC		SCREEN MATERIAL: PVC	
JOINT TYPE: Threaded		SCREEN TYPE: Slotted SIZE: .010"	
FILTER PACK TYPE: Sand	SIZE: WB-40	BENTONITE SEAL THICKNESS: 19'	
WATER LEVEL BEFORE: 31.32 AFTER DEVELOPMENT:		DEVELOPMENT METHOD: Hand Bail	



LOCATION: East of MW-1A approximately 75'

ATTACHMENT C
SOIL ANALYTICAL RESULTS SUMMARY

ATTACHMENT C

SOIL ANALYTICAL RESULTS MARYON INDUSTRIES BRIDGETON PLANT

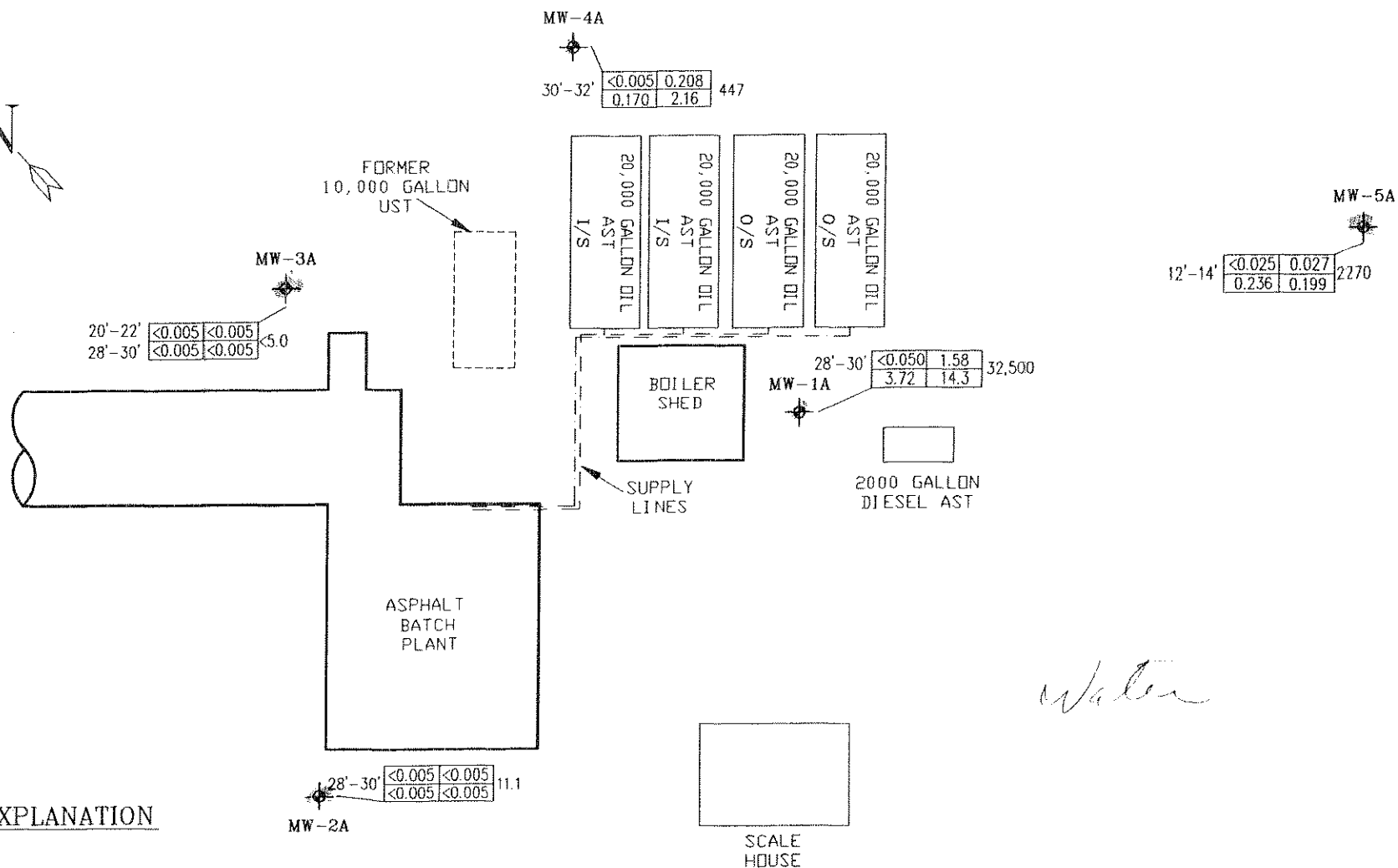
Location	Depth	Benzene	Toluene	Ethylbenzene	Xylenes	TPH
MW-1A	14'-16'	<0.050	<0.050	<0.050	10.7	14,900
MW-1A	28'-30'	<0.050	1.58	3.72	14.3	32,500
MW-2A	18'-20'	<0.005	<0.005	<0.005	<0.005	<5.0
MW-2A	28'-30'	<0.005	<0.005	<0.005	<0.005	11.1
MW-3A	20'-22'	<0.005	<0.005	<0.005	<0.005	<5.0
MW-3A	28'-30'	<0.005	<0.005	<0.005	<0.005	<5.0
MW-4A	22'-24'	<0.005	0.015	0.040	0.078	245
MW-4A	30'-32'	<0.005	0.208	0.170	2.16	447
MW-5A	12'-14'	<0.025	0.027	0.236	0.199	2270
MW-5A	26'-28'	<0.005	<0.005	<0.005	<0.005	<5.0

Notes: Results in parts per million (ppm)

TPH - total petroleum hydrocarbons

Bold denotes exceedences of MDNR Soil Cleanup Guidelines

Samples for MW-1A through MW-2A were obtained 10-31-94 through 11-02-94, samples from MW-5A were obtained 03-24-95



EXPLANATION

- MONITORING WELL
- AST ABOVEGROUND STORAGE TANK
- I/S IN SERVICE
- O/S OUT OF SERVICE
- UST UNDERGROUND STORAGE TANK

DEPTH (IN FEET)	Benzene	Toluene	TPH
	Elhylbenzene	Xylenes	
-RESULTS IN ppm			

MAXIMUM ADSORBED-PHASE BTEX/TPH
DISTRIBUTION MAP
MARYON INDUSTRIES, INC.
WESTLAKE SITE
BRIDGETON, MISSOURI

ATTACHMENT C
SCALE:
1"=20'
DWG. #
MH01-1

SCHREIBER
& GRANA
& YONLEY
INCORPORATED
ENVIRONMENTAL ENGINEERS

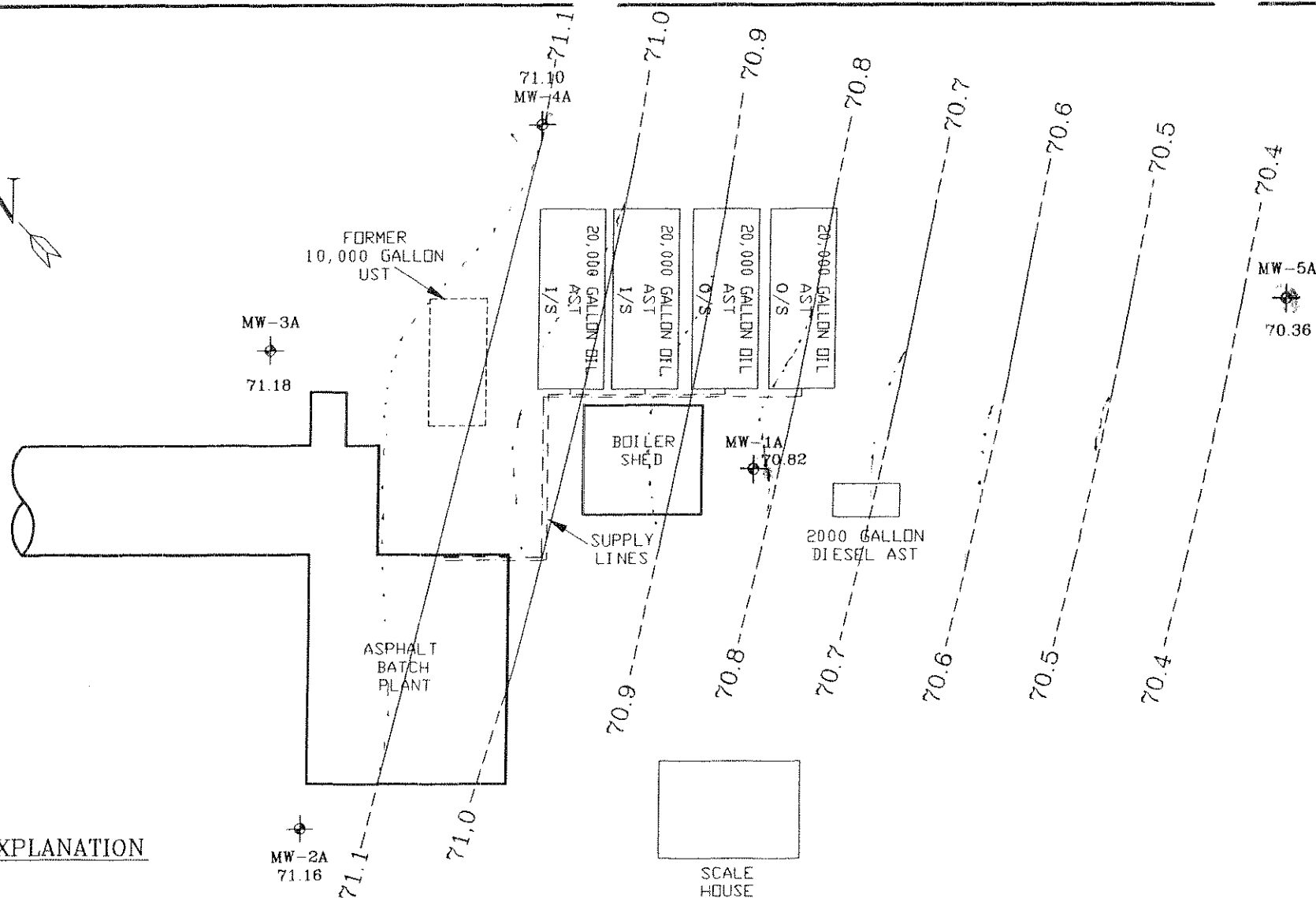
ATTACHMENT D

**COMPLETED LEAKING UNDERGROUND STORAGE TANK
SOIL CLEANUP GUIDELINES CHART**

Leaking Underground Storage Tank Soil Cleanup Guidelines

Site Features	Score 15 if True		Score 10 if True		Score 5 if True		Score 0 if True	
Groundwater potable?	No	X	Unknown		Poor		Yes	
Depth to groundwater?	> 100 ft		51-100 ft		25-50 ft	X	< 25 ft	
Natural fractures present?	None		Unknown		Present	X	Predominant	
Man-made vertical conduits?	None	X	Unknown		Present		Predominant	
Man-made horizontal conduits?	None		Unknown		Present	X	Predominant	
Coarse soil or sand present?	None		Unknown		Present	X	Predominant	
Water wells nearby?	> 1000 ft away	X	501-1000 ft away		100-500 ft away		< 100 ft away	
Background levels present?	Above action levels		Unknown	X	Below action level		Nondetectable	
Subtotals		45		10		20		
Total Score =							75	
Soil Cleanup (ppm)								
Total Score	101-120		71-100		41-70		40 or less	
BTEX =	2/10/50/50		1/5/10/10		0.5/1/2/2		B+T+E+X < 2	
TPH =	500		200		100		50	

ATTACHMENT E
GROUNDWATER ELEVATION MAP



EXPLANATION

- ⊕ MONITORING WELL
- AST ABOVEGROUND STORAGE TANK
- I/S IN SERVICE
- O/S OUT OF SERVICE
- UST UNDERGROUND STORAGE TANK

— 70.4 — GROUNDWATER ELEVATION (in feet),
-dashed where inferred

CONTOURED GROUNDWATER ELEVATIONS MAP

Data Date: March 31, 1995

MARYON INDUSTRIES, INC.
WESTLAKE SITE
BRIDGETON, MISSOURI

ATTACHMENT E

SCALE:
1"=20'

DWG.#
MII01-1

**SCHREIBER
& GRANA
YONLEY
INCORPORATED**
ENVIRONMENTAL ENGINEERS

ATTACHMENT F
GROUNDWATER ANALYTICAL RESULTS SUMMARY

ATTACHMENT F

GROUNDWATER ANALYTICAL RESULTS SUMMARY MARYON INDUSTRIES BRIDGETON PLANT

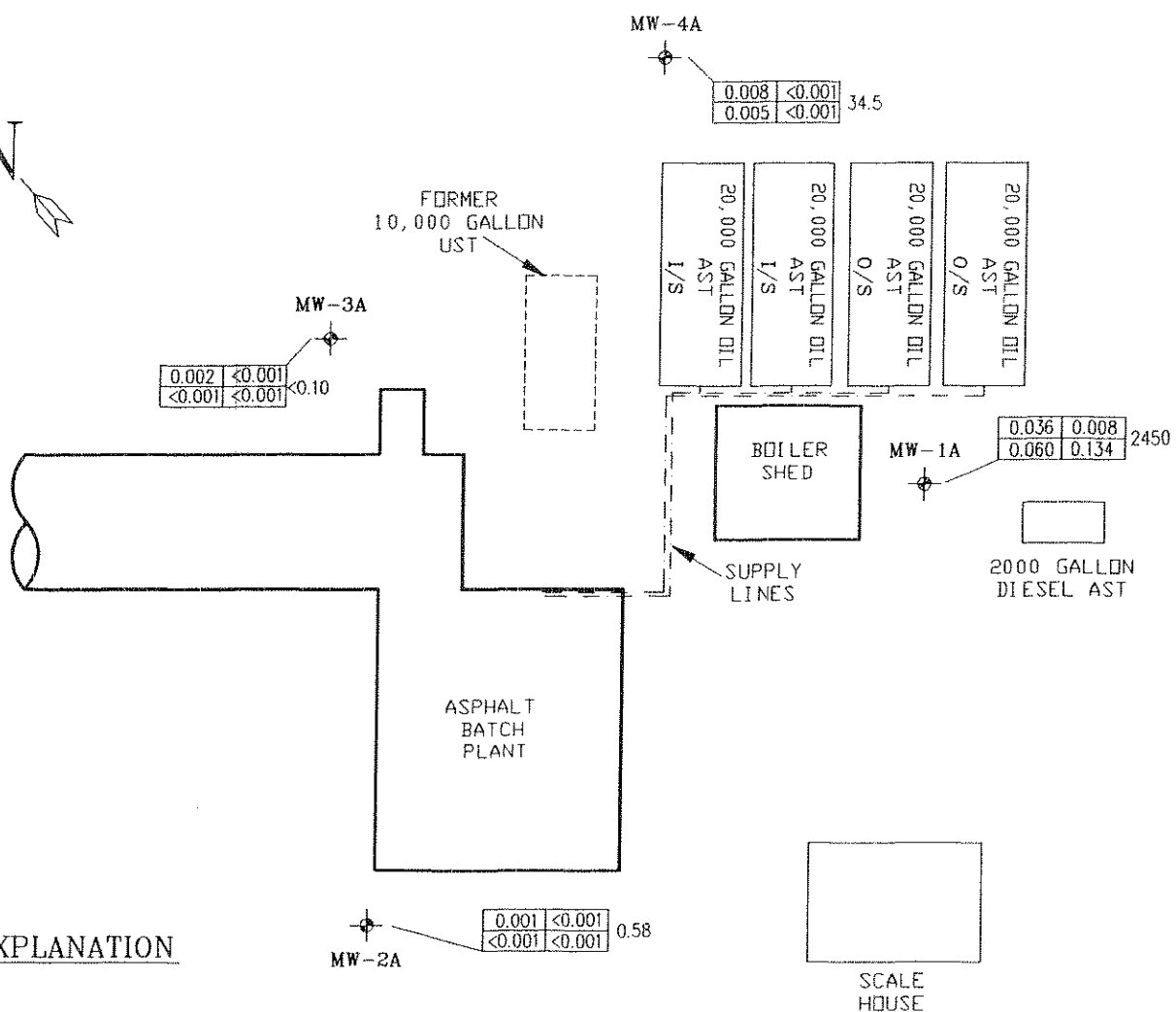
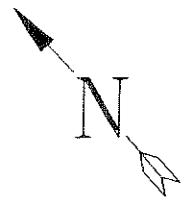
Date	Location	Benzene	Toluene	Ethyl- benzene	Xylenes	Total BTEX	TPH
11-10-94	MW-1A	NS	NS	NS	NS	NS	ND
	MW-2A	0.001	<0.001	<0.001	<0.001	<0.004	<0.10
	MW-3A	<0.001	<0.001	<0.001	<0.001	<0.004	0.16
	MW-4A	<0.001	0.001	0.003	0.002	<0.007	13.8
03-31-95	MW-1A	0.036	0.008	0.060	0.134	0.238	2450
	MW-2A	0.001	<0.001	<0.001	<0.001	<0.004	0.58
	MW-3A	0.002	<0.001	<0.001	<0.001	<0.005	<0.10
	MW-4A	0.008	<0.001	0.005	<0.001	<0.015	34.5
	MW-5A	0.002	0.001	<0.001	0.005	<0.009	1.41

Notes: Results in ppm ✓

TPH - Total petroleum hydrocarbons

Bold denotes exceedences of MDNR Non-Potable Groundwater Cleanup Guidelines

NS denotes not sampled



EXPLANATION

- MONITORING WELL
- AST ABOVEGROUND STORAGE TANK
- I/S IN SERVICE
- O/S OUT OF SERVICE
- UST UNDERGROUND STORAGE TANK

Benzene	Toluene	TPH
Ethylbenzene	Xylenes	

-RESULTS IN ppm

SOLUBLE-PHASE BTEX/TPH DISTRIBUTION MAP

Data Date: March 31, 1995

MARYON INDUSTRIES, INC.
WESTLAKE SITE
BRIDGETON, MISSOURI

ATTACHMENT F

SCALE:
1"=20'

DWG.#
MH01-1

**SCHREIBER
& GRANA
YONLEY
INCORPORATED**
ENVIRONMENTAL ENGINEERS

ST 13618
R 3874

THE STOLAR PARTNERSHIP
ATTORNEYS AT LAW
THE LAMMERT BUILDING
911 WASHINGTON AVENUE
ST. LOUIS, MISSOURI 63101-1290
(314) 231-2800
FAX (314) 436-8400

WILLIAM R. WERNER
Email: WRW@STOLARLAW.COM

ILLINOIS OFFICE
MARKET 1757 BUILDING
NORTH HIGH STREET
BELLEVILLE, ILLINOIS 62222-0484
(618) 277-1030
FAX (618) 277-1882
H. M. STOLAR
(RETIRED 1984)

January 8, 1999

Mr. David Pate
Williams & Company
P.O. Box 104116
Jefferson City, Missouri 65110

RECEIVED
JAN 11 1999
HAZARDOUS WASTE PROGRAM
MISSOURI DEPARTMENT OF
NATURAL RESOURCES

Re: West Lake Landfill UST Closure
ST0013618, R0003874 (Tank # 11)

Dear Mr. Pate:

This letter is in follow up to our telephone conference earlier this month regarding eligibility of the above-referenced tank for reimbursement of remediation expenses from the Missouri Petroleum Storage Tank Insurance Fund (the "Fund"). You indicated that MDNR's records show that our client, West Lake Quarry and Material Company ("West Lake"), continues to operate two tanks on the site, Tank #3 and Tank #11. As explained below, West Lake discontinued operating these tanks at least as early as 1988 and 1993, respectively.

Tank #11 is the tank which is the subject of the ongoing closure (with respect to which we understand that reimbursement has been or will be requested from the Fund on behalf of Maryon Industries, Inc., the operator of the site and the entity which has assumed responsibility for the tank). West Lake removed Tank #11 along with six other tanks on the West Lake site in April, 1993. Upon completion, a Closure Report dated June 14, 1993, documenting the removal of all seven tanks was submitted to the Missouri Department of Natural Resources. A copy of Part A and pertinent sections of Part B of the June 14, 1993 UST Closure Report is enclosed for your information. Please note that the above-referenced tank is referred to by MDNR as Tank #11 in accordance with tank registration information for this site; the tank is referred to in the Closure Report as Tank #7 (and cross-referenced as MDNR #11), because it was the 7th tank pulled in April 1993.

Tank #3 is located on property owned by Bridgeton Landfill, LLC (f/k/a Laidlaw Waste Systems (Bridgeton) Inc., f/k/a West Lake Landfill, Inc.). West Lake discontinued use of Tank #3 sometime prior to July, 1988 when the stock of West Lake Landfill, Inc. was sold to Laidlaw Waste Systems, Inc., and we have confirmed with Bridgeton Landfill that Tank #3 has not been

Mr. David Pate
Williams & Company
January 8, 1999
Page 2

COPY

in operation since that time. As I explained on the phone, the location of Tank #3 is geographically distant from Tank #11. For your reference, I have enclosed a map of the site showing ownership as of July 1988, and upon which I have marked the approximate locations of Tank #3 and Tank #11. (Note that the tank referred to in the Closure Report as Tank #3 refers to the tank known to MDNR as Tank #5; the tank known to MDNR as Tank #3 is not discussed in the Closure Report.)

As we discussed, Tank #3 has not been removed because it is located in an area containing radioactive waste generated and disposed of by the Atomic Energy Commission (now, the United States Department of Energy) and sent to the West Lake landfill by Cotter Corporation, NSL, without the knowledge of the landfill. The radioactive materials and any other hazardous substances are being addressed as part of the West Lake Landfill Superfund Site. I have enclosed a copy of an overland gamma survey map, (copies of which have been provided previously to The United States Environmental Protection Agency as lead agency and to MDNR's Superfund Section) showing the area of radioactive contamination. I have marked on this map the approximate location of Tank #3. As can be seen from the enclosed maps, Tank #3 and the area of radioactive contamination is remote from and does not impact the property owned by West Lake and on which Tank #11 was located.

Please confirm that eligible remediation expenses in connection with Tank #11 (to be expended in accordance with a budget approved in advance by the Fund) will be reimbursable under the Fund. Do not hesitate to call me if you need any additional information or clarification.

Very truly yours,



William R. Werner

WRW/jvb

Enclosures

cc: Jim Gowney, MDNR (w/ encl) ✓
Vincent M. Jones, Maryon Industries
William E. Whitaker, West Lake

24 HR.
PHONE: 314-421-0328
FAX: 314-351-0894
EASYLINK: 62561520



4801 FYLER AVENUE • ST. LOUIS, MISSOURI 63116
(314) 351-5500

May 18, 1993

ADR/Westlake Quarry
12976 St. Charles Rock Road
Bridgeton, Missouri 63044

Gentlemen:

This letter is to provide you with information as to the disposal of seven underground storage tanks that were removed on April 22, 23 and 26th 1993 from Westlake Quarry in Bridgeton. The tanks were taken to Branch Street where they were steam cleaned and cut up and disposed of as scrap. The 750 gallons of sludge and the wash water was collected and disposed of according to EPA regulations.

If I maybe of further assistance, please do not hesitate to contact me.

THE KIESEL COMPANY

Kathryn K. Cole

ENVIRONMENTAL ASSISTANT

KKC: kb



PLEASE TYPE

(Form designed for use on elite (12-pitch) typewriter.)

EPA Form 8700-22 (Rev. 8-88)

Form Approved OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of 1	Information in the shaded areas is not required by Federal law, but is required by Illinois law.	
3. Generator's Name and Mailing Address GATEWAY PETROLEUM CO., INC. 7200 West Main St. : Belleville, IL : 62223		Location If Different		A. Illinois Manifest Document Number IL 3723708		Fee Paid, If Applicable
4. Generator's Phone (618) 271-0880		6. US EPA ID Number ILD092358548		B. Illinois Generator's ID 1 6 3 0 4 5 0 0 3 2		
5. Transporter 1 Company Name GATEWAY PETROLEUM CO., INC.		8. US EPA ID Number		C. Illinois Transporter's ID 0 1 5 3		
7. Transporter 2 Company Name		10. US EPA ID Number		D. (618 271-0880) Transporter's Phone		
9. Designated Facility Name and Site Address GATEWAY PETROLEUM CO., INC. 3000 Missouri Avenue East St. Louis, IL 62205		11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)		E. Illinois Transporter's ID		
				F. () Transporter's Phone		
				G. Illinois Facility's ID 1 6 3 0 4 5 0 0 3 2		
				H. Facility's Phone (618) 271-0880		
12. Containers		13. Total Quantity		14. Unit		1. Waste No.
a. WASTE OIL - NON-FLAMMABLE		1 T T		21.60		EPA HW Number XX Authorization Number 9 9 5 4 0 1
b.						EPA HW Number XX Authorization Number
c.						EPA HW Number XX Authorization Number
d.						EPA HW Number XX Authorization Number
Additional Descriptions for Materials Listed Above		K. Handling Codes for Wastes Listed Above in Item # 14				
NO Dept. of Natural Resources: Generator I.D. # A-1837-4725: Hauler # H-1063 : Site # RR-05		1 = Gallons 2 = Cubic Yards				
15. Special Handling Instructions and Additional Information						
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable International and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.						
Printed/Typed Name R. Odenwald, Jr.		Signature <i>R. Odenwald</i>		Date Month Day Year		
17. Transporter 1 Acknowledgement of Receipt of Materials		Printed/Typed Name Philip Schaefer		Signature <i>Philip Schaefer</i>		Date Month Day Year 04/12/93
18. Transporter 2 Acknowledgement of Receipt of Materials		Printed/Typed Name		Signature		Date Month Day Year
19. Discrepancy Indication Space						
Facility Owner or Operator: Certification of receipt of XXXXX materials covered by this manifest except as noted in Item 19.						
Printed/Typed Name JIM JACKSON		Signature <i>Jim Jackson</i>		Date Month Day Year 4/12/93		

This Agency is authorized to require, pursuant to Illinois Revised Statutes, Chapter 111 1/2 Section 21, that this information be submitted to the Agency. Failure to provide the information may result in a civil penalty against the owner or operator of not to exceed \$25,000 per day of violation. Falsification of this information may result in a fine up to \$50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

COPY 1. TSD MAIL TO GENERATOR COPY

In case of a spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802 or 202/426-2675.



MISSOURI DEPARTMENT OF NATURAL RESOURCES
P.O. BOX 176, JEFFERSON CITY, MISSOURI 65102
314-751-3176

FORM DNR HWT-10 — WASTE OIL DAILY LOG

INSTRUCTIONS
ON BACK

THIS FORM IS TO BE USED
FOR WASTE OIL ONLY

OTHER HAZARDOUS WASTES MUST
BE MANIFESTED SEPARATELY

PART I		PLEASE PRINT OR TYPE	B. MISSOURI GENERATOR I.D. NO.	C. WASTE OIL GALLONS RECEIVED	DO BE COMPLETED BY GENERATOR. PRINT NAME, SIGNATURE DATE OF TRANSACTION
A. GENERATOR'S NAME: ADDRESS: CITY, STATE, ZIP:					
West Lake Quarry & Materials Co. 13570 St Charles Rock Rd. Bridgeton, Mo 63044				500	PATRICK REEVES 4-12-93
				300	K. BEERS 4-12-93
				150	BILL FRANKLIN 4-12-93
				50	LARRY BROWN 4-12-93
				280	DAVID HUNTER 4-12-93
				250	TONY AIELLO 4-12-93
				100	ALAN J. LUTHERY 4-12-93
				370	JEFF MOSES 4-12-93
				250	BOB JOHNSON 4-12-93
D. WASTE OIL GALLONS (TOTAL THIS PAGE)				2160	

E. PAGE NUMBER 1 OF 1 WASTE OIL DAILY LOG PAGES FOR THIS SHIPMENT.			
F. MANIFEST NUMBER	A-1837	G. MISSOURI TRANSPORTER I.D. NUMBER	H-1063
H. TRANSPORTER CERTIFICATION: This is to certify that the waste oil listed above (as defined in 10 CSR 25-11.010) was collected, a signature was obtained from an authorized representative of the generator listed, that the above information is correct to my best knowledge and belief and that this shipment is in compliance with the applicable regulations of the MDNR, DOT, and EPA.			
SIGNATURE OF DRIVER Philip Schaefer		DATE 4-12-93	PRINT OR TYPE NAME OF DRIVER Philip Schaefer

GATEWAY PETROLEUM

7200 WEST MAIN ST.
BELLEVILLE, ILLINOIS 62223
EMERGENCY NUMBER 618-271-0880 • 314-231-2756

ENTERED

20899

WEST LAKE QUARRY & MATERIALS CO.

13570 St. Charles Rock Road
Bridgeton, MO 63044

Ray Klinger

Route: North Route# 170
Stop# 30

P.U. last year: 4

Ave. Gal. Last Year: 625

Tank size : 2000

Interval : 90

2/5/93 Amt. 390
12/12/92 Amt. 200

COPY

WATER ——— GALLONS ———
OIL #1 Diesel GALLONS: 500

COMMENTS:

Monday 4/12/93. 1 underground tanks in same area with Laid Law *Send Repetition Copies to ADR.*
6M200 (100 Amurge)
Bill to West Lake

SIGNATURE:

[Signature]

DATE:

4-12-93

DRIVER:

[Signature] #5

The above signed certifies that their petroleum material has not been mixed with a substance considered hazardous under RCRA, Section 3001 and/or CERCLA, Section 102.

Thank You For Your Business

OFFICE COPY

COPY

JUNE 14, 1993

UST CLOSURE REPORT & ESP RESPONSE

SITE: WESTLAKE COMPANIES, UT0013618
13570 St.Charles Rock Road
Bridgeton, Mo. 63044

OWNER: WESTLAKE COMPANIES, OW10412
12976 St.Charles Rock Road
Bridgeton, Mo. 63044

ESP FILE # LU3874

RECEIVED

JAN 11 1999

HAZARDOUS WASTE PROGRAM
MISSOURI DEPARTMENT OF
NATURAL RESOURCES

COPY

UT 0013618

June 14, 1993

CLOSURE RESPONSE INDEX

SECTION I

MDNR Closure Format Forms
Supplementary Information Report
Authorization Notice
Disposal Documents

SECTION II

Analytical Compilation Schedule
Laboratory Results
Chain of Custody Forms

SECTION III

Topographic/Locator Map
Site Drafts
Photographs

RECEIVED

JAN 7 1900

COPY

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER POLLUTION CONTROL PROGRAM
UST CLOSURE REPORT PART A (PAGE 2)

COPY

SECTION VII SLUDGE/RINSATE DISPOSAL

1,750 gallons of sludge/rinsate were removed and disposed of by:

Hazardous waste disposal firm Gateway Petroleum Kiesel Oil Company
Address 7200 W. Main 4801 Fyler
500 gl. Belleville, Il. 750 gl. St. Louis, Mo.

Attach appropriate documentation of waste disposal

SECTION VIII RESULTS OF SOIL ANALYSIS

(Report all results in ppm and attach lab results)

Sample ID	TPH	Benzene	Toluene	E-Benzene	Xylene	Heavy Metals
		See Schedule & Analytical Data				

Attach chain of custody documentation

* For waste oil USTS only. List any results above detection limits.

SECTION IX LOCATION SKETCH

Attach a sketch of the location which includes:

- size and contents of all USTs and piping and lengths of pipe runs
- locations of all fuel lines and pump islands
- location of the tank pit boundaries

Attached

Indicate scale of the sketch in feet

Designate each sample location on the sketch using the specified labeling format

SECTION X PHOTOGRAPHS

Attach color photographs of the following:

- each side of the removed UST, if the UST is removed ☒
- each wall of the excavation pit, if UST is removed ☒
- each sealed vent or pipe line
- sealed UST, if closed in-place

Attached

Comments See General Summary & Supplementary Data

I certify that the information in this report is true and complete

Party performing closure [Signature]

Date 6-14-93

Owner/operator [Signature]

Date 6/14/93

MAILING ADDRESS

If TPH < 25 ppm, total BTEX < 1 ppm, and Benzene < 0.5 ppm AND the amount of soil excavated is less than (# of tanks x 100 cubic yards), complete Part A of the UST Closure Report and submit it to:

Missouri Department of Natural Resources
Attn: UST Coordinator
P.O. Box 176
Jefferson City, Missouri 65102

XXX
If any of the preceding conditions have been exceeded complete both Parts A and B of the UST Closure Report and submit it to:

Missouri Department of Natural Resources
Environmental Services Program
Leaking Underground Storage Tank Unit
P.O. Box 176
Jefferson City, Missouri 65102

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER POLLUTION CONTROL PROGRAM

UST CLOSURE REPORT PART B

COPY

SECTION XI INFORMATION ON POSSIBLE RECEPTORS (Attach completed Figure 3 matrix)

Depth to groundwater 350 ft
Distance to streams N/A ft
Distance to water wells N/A ft
Distance to lakes 5 ml. ft (that are within 0.5 miles of site) See Supplementary Data

SECTION XII ADDITIONAL INFORMATION ON EACH LOCATION

Add the following information to the location sketch:

X - all above ground tanks and associated piping on the site, plus the size and content of each
N/A all underground utilities within 100 ft of the site (sanitary sewers, power lines, storm sewers,
N/A utility trenches, water lines, pipelines, etc.)
- direction and degree of slope in area Identified in Supplementary Data
X - depth to bottom of each tank

SECTION XIII SOIL INFORMATION

Types of soil encountered during excavation and depth to each:

(or attach a drilling log with this information or a sketch of a side wall)

Type	Depth
Limestone (crushed)	Grade
Limestone rock	3-5'
Clay Soils	3-10'
Clay silts/gravel	9-20'

Additional information provided in Supplementary Data

COPY

Figure 3
Leaking Underground Storage Tank Soil Cleanup Guidelines
for Undisturbed Soil

WESTLAKE COMPANIES UF 0013618

Site Features	Score 15 if True		Score 10 if True		Score 5 if True		Score 0 if True	
Groundwater potable?	No	XXX	Unknown		Poor		Yes	
Depth to groundwater?	> 100 ft	XXX	51-100 ft		25-50 ft		< 25 ft	
Natural fractures present?	None		Unknown	XXX	Present		Predominant	
Man-made vertical conduits?	None	XXX	Unknown		Present		Predominant	
Man-made horizontal conduits?	None	XXX	Unknown		Present		Predominant	
Coarse soil or sand present?	None		Unknown	XXX	Present		Predominant	
Water wells nearby?	> 1000 ft away	XXX	501-1000 ft away		100-500 ft away		< 100 ft away	
Background levels present?	Above action levels		Unknown	XXX	Below action level		Nondetectable	
Subtotals		75		30				
Total Score =							105	
XXXXXX Soil Cleanup (ppm)								
Total Score	101-120		71-100		41-70		40 or less	
BTEX =	2/10/50/50		1/5/10/10		0.5/1/2/2		B+T+E+X < 2	
TPH =	500		200		100		50	

COPY

SUPPLEMENTARY INFORMATION

- 1.0 Area/Location
- 2.0 Background
- 3.0 Preliminary Site Inspection
- 4.0 UST Identification
- 5.0 Mechanical Removal
- 6.0 UST Inspection
- 7.0 Soil Sample & Screening Methods
- 8.0 Topography & Soils
- 9.0 Groundwater/Aquifers

1.0 AREA / LOCATION

The referenced site is located approximately one mile due north of the Mark Twain Expressway (Highway 70) and the I-270 Bypass junction, west of St. Louis, Missouri. Access to the property is thru the northeast perimeter traveling south off of highway 115 (St. Charles Rock Road), and is recognized as part of the local jurisdiction within the city of Bridgeton, Missouri. A topographic section and locator map are provided elsewhere in this report.

The general vicinity is relatively limited in development, with some industrial and commercial operations. Agricultural areas are predominant, outside the immediate adjoining parcels of property.

2.0 BACKGROUND

Prior to 1988, Westlake Companies owned the present site which included all immediate surrounding land parcels located south of Highway 115. With various business concerns, primary activities were divided by mining/quarry operations on the eastern parcels and operating a landfill on the western side. Production plants for material screening, asphalt batching, and mixing concrete were maintained in the central access area between the two primary operations, on what is recognized as the southern portion of the current property.

In 1988, the surrounding land parcels were acquired from Westlake Companies by Laidlaw Waste Systems, Inc., to conduct landfill operations. The various operating plants, have since been purchased from Westlake Companies. With the reduction in property and sale of the plants, use of the underground tanks has ceased. In compliance with the current UST laws, removal and closure were implemented.

COPY

3.0 PRELIMINARY SITE INSPECTION

During March of 1993, a site inspection was conducted regarding the status and condition of underground storage tanks (UST's) located at the referenced facility. A work plan was established for removal of six ust's and Notice of Removal issued to the MDNR.

Removal of three tanks would involve working in the immediate area of structural pylon footings, thus limiting directional access and presenting potential risk to the integrity of the foundations. Other tanks were located in areas directly adjacent to traffic thoroughfare of heavy equipment providing limited working space.

Based on inspection, four of the ust's have been out of service for some time. Only two tanks scheduled for removal were active, (Waste Oil & 10,000 Unlead).

4.0 UST IDENTIFICATION

During the course of removal, a numerical reference was established in chronological order. Subsequently all activity including the tank reference and associated data collection continue to reflect this sequence, throughout this report.

In order to substantiate a relation between the numerical reference and the current UST registration/Closure Notice, we have produced the following table.

<u>Removal</u>	<u>Description</u>	<u>MDNR</u>
# 1	10,800 gl. Diesel	# 4
# 2	10,000 gl. Diesel	# 6
# 3	10,000 gl. Diesel	# 5
# 4	2,000 gl. Waste Oil	# 8
# 5	2,000 gl. Unlead	# 1
# 6	10,000 gl. Unlead	# 2
# 7*	10,000 gl. Diesel	# 11

*This tank was added to the removal project after completing the first six tanks.

COPY

5.0 General Comments

Removal was conducted in accordance with recommended industry practices. Gateway Petroleum provided removal of tank fluids prior to project initiation. Electrical service was disconnected and pump units (when required) were removed. Supply lines (where applicable) were drained of any remaining product. Monitoring for explosive vapors was conducted during each phase of work. Excavation was directed to provide adequate clearance for the tank(s) to be lifted freely. A significant problem encountered with these removals is due to the low cohesion properties of the subsurface materials, in the initial 5 foot range and resulted in frequent excavation collapse. Compounded with structure integrity and thoroughfares, excavations were backfilled almost immediately following removal and sample acquisition.

Tank #1

Initiated with removal of surface soils. No existing supply line was evident, indicating a non-service status. Removal of this tank presented a structural threat to the footing and pylon for an overhead conveyor. Action was taken to minimize disturbance of the surrounding base. As seen in the photographs of removal, soils were migrating from the base, and backfill was immediately conducted. In order to obtain soil samples, a GEO-PROBEtm was utilized for acquiring representative samples covering a vertical span of 2 feet (18-20' below grade) in two areas.

Tank #2

Initiated with removal of surface soils. No existing supply line was evident, indicating a non-service status. Removal of this tank was not as threatening as tank #1, However, based on the proximity and soil conditions, the excavation was limited and upon securing soil samples, was immediately backfilled.

Tank #3

Same as tank #1 & 2, with respect to soils at grade and the absence of piping. This tank was located directly below the conveyor, between two smaller footings. The clearance from tank end-caps to footings was less than 3.5 feet total space and required the excavation be drawn at a 45° angle to remove the tank. Upon securing the tank bed samples, the excavation was backfilled. As shown in the photographs, the tank was drawn/removed in a roll-out fashion.

MECHANICAL / REMOVAL cont.

COPY

Tank #4

Initiated with surface soils removal. Drain piping was intact, requiring isolation. Excavation was expanded due to repeated falling of surrounding fill material. As shown in the photographs, the excavation had expanded to within a foot of the foundation wall for the building. Upon tank removal and sample acquisition, the pit was backfilled.

Tank #5

Initiated with electrical disconnect and removal of the suction pump. This system had been out of service for some time. However, explosive vapors were detectable and proper purging was conducted prior to continuance. Appropriate removal of grade cover and the tank bulkhead allowed the tank to be removed with little difficulty.

Tank #6

Conducted simultaneously with #5. The increase in area excavation provided undermining problems with the traffic thoroughfare surface along the southeast wall. Upon removal and sample collection, the excavation was backfilled.

Tank #7

Access for this removal was limited by the close proximity of above-ground tanks and operating equipment associated with the asphalt batching plant. In addition, repeated collapse of the excavation walls occurred during equipment operation each time the plant went into batch production. As shown in the photographs, distinct voids were noted in the foundation area along with the fallen excavation walls. The excavation was immediately filled following sample acquisition.

6.0 UST INSPECTION

Upon mechanical removal, tanks were secured on grade and inspected for cracks, corrosion and leaks. As identified in photodocumentation, confirmations were identified with each tank.

- #1 Corrosion pits in two areas, 1 hole on each endcap.
- #2 Corrosive pit and small hole on tank bottom.
- #3 Multiple holes in Endcap and corroded seam.
- #4 Multiple holes on endcaps
- #5 Multiple holes on lower portion of endcaps and bottom.
- #6 Holes 1"Ø, on encaps, seam corrossions and holes on bottom.
- #7 Multiple holes on endcaps, lower seams.

COPY

7.0 SOIL SAMPLING & SCREENING

Soil samples for tank #2 thru #7, were obtained by use of the excavator to collect soil from native soils beneath the tank bed area. Representative samples were labeled and identified using the recommended format provided by MDNR in the 1992 guidelines. Ice was used to preserve samples during storing and transport to American Technical & Analytical Services (ATAS), where samples were analyzed in accordance with regulatory protocol and requirements.

Acquisition of the samples for tank #1, were performed using a GEO-PROBE unit to collect a representative sample from two locations at a vertical depth covering 18 to 20 feet below grade surface.

Two independent field screening techniques were utilized in examining excavated soils, a Photo-Ionization Detector (PID) and calibrated sampling tubes (SYN-TEC). No significant or detectable levels were observed with the excavated soils.

8.0 TOPOGRAPHY/SOILS

As provided with in the Closure Report section, there are no substantial elevation changes regarding the immediate site. Elevation has been determined as 460 feet above mean sea level (MSL). Existing slope contours on the property have been made over the past two decades, attributed to the traffic thoroughfare and operating areas. The grade surface is crushed rock and silts with variable depths to eight feet below grade. The underlying soils in the southern property area appear to be clay, clayey gravel and clay silts overlying bedrock formation. Limestone bedrock has been observed in depths from surface to twenty feet below grade and extend in depth in excess of 200'. Soil conditions in the northern area appear to be a mix of clayey sands, sand and gravel overlying a shallow bed of sand-silt. Bedrock is located in depths from 20 to 60 feet below grade and extend 200 to 250 feet.

COPY

9.0 GROUND WATER/AQUIFER

Groundwater has been established below the bedrock areas approximately 350 feet below grade. There is no evidence of a conduit pertaining to the property, such as the emergence of a stream or creek. Three lagoons on the property are on the southern area where bedrock is visible at grade. With the recent rains, no outfall from the lagoons has occurred.

The Missouri River is two miles west of the property and flows in a northern direction. Cowmire Creek is located east of the site and flows in a northern direction.

A comparison of various ponds and lakes in the region would offer the potential for an aquifer to be in the area. However, based on the topographic elevations and the known formation of bedrock, the potential is greatly limited with respect to developing a flow without a primary feed. Recent precipitation may influence the ability of perched water or high saturation areas near the bedrock surfaces, however, no investigation or characterization has been conducted under this scope of work.

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER POLLUTION CONTROL PROGRAM
UST CLOSURE NOTICE

FILE COPY

COPY

1 MAR 26 1993

FOR STATE AGENCY USE ONLY

Date received 3-26-93 County ST LOUIS UT# 0013618 DWID 0010412
Region SLRO

SECTION I FACILITIES INFORMATION

Facilities name WESTLAKE QUARRY & MATERIAL CO. UT# 13618
Address 13570 ST CHARLES ROCK RD.
County ST LOUIS City BRIDGETON Zip code 63044
Telephone 314-739-1122
Estimated Date of Project Initiation: 4/10/93 Estimated Date of Project Completion: 4/25/93

SECTION II USTs CLOSED

Tank #	Capacity (gal)	Year Installed	Date Removed from Service (m/y)	UST Construction Material	Product Stored	Method of Closure *
1	2000	82	3-93	STEEL	UNLEAD	R
2	10,000	81	1-92	"	UNLEAD	R
4	10,800	72	3-93	"	DIESEL	R
5	10,000	72	1-92	"	DIESEL	R
6	10,000	77	3-93	"	DIESEL	R
8	1,000	60	3-93	"	WAX OIL	R

Attach additional sheets if necessary

* Removal, in-place

SECTION III USTs REGISTRATION

Are USTs registered? ☒ Yes ☐ No
If no, attach completed notification of UST form.
Are or were USTs in use on or after August 28, 1989? ☒ Yes ☐ No
If yes, has \$100 fee per UST been paid? ☒ Yes ☐ No
If no, attach \$100/UST check

SECTION IV UST OWNER INFORMATION

Name WESTLAKE QUARRY & MATERIAL CO.
Address 12976 ST CHARLES ROCK RD.
County ST LOUIS City BRIDGETON Zip Code 63044
Contact Person R. WATKINS Telephone 314-739-1122

SECTION V PARTY PERFORMING CLOSURE

Name AOR/ST LOUIS
Address P.O. BOX 182
County ST CHARLES City ST CHARLES Zip Code 63302
Contact Person JOE RUTHERFORD Telephone 947-7763

SECTION VI CERTIFICATION OF PROPER CLOSURE

I (name) JOE RUTHERFORD (please print) certify that API-1504 and MDHFR procedures will be followed for safety, excavation, handling and disposal of soils and of other materials; and that soils from beneath the tanks, distribution lines and pump islands will be analyzed in accordance with the requirements outlined in the Underground Storage Tank Closure Guidance Document

SIGNATURE OF RESPONSIBLE PARTY

Joe Rutheford

DATE 5/25/93

SECTION VII CLOSURE DATE

Closure may be completed on or after (Date) April 26, 1993

Signature of authorized MDNR representative James Harris (Date) 3/20/93

SECTION VIII WAIVER OF 30-DAY PERIOD

Alternative date of planned closure completion

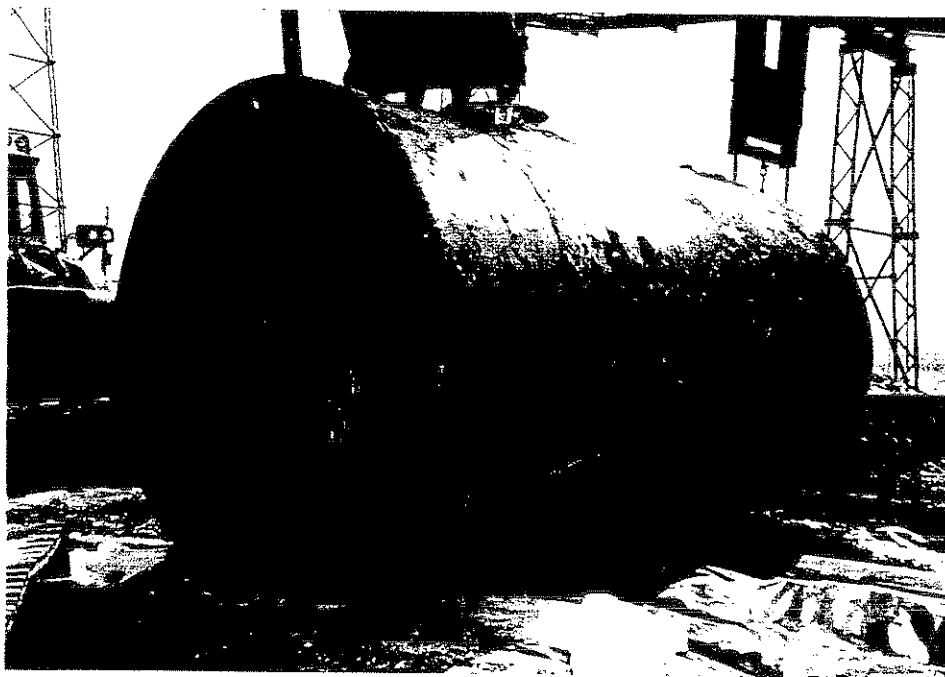
Authorized MDNR representative [Signature] Date 4-7-93 Regional Office SLRO

State Agency Use Only

State Agency Use Only



COPY

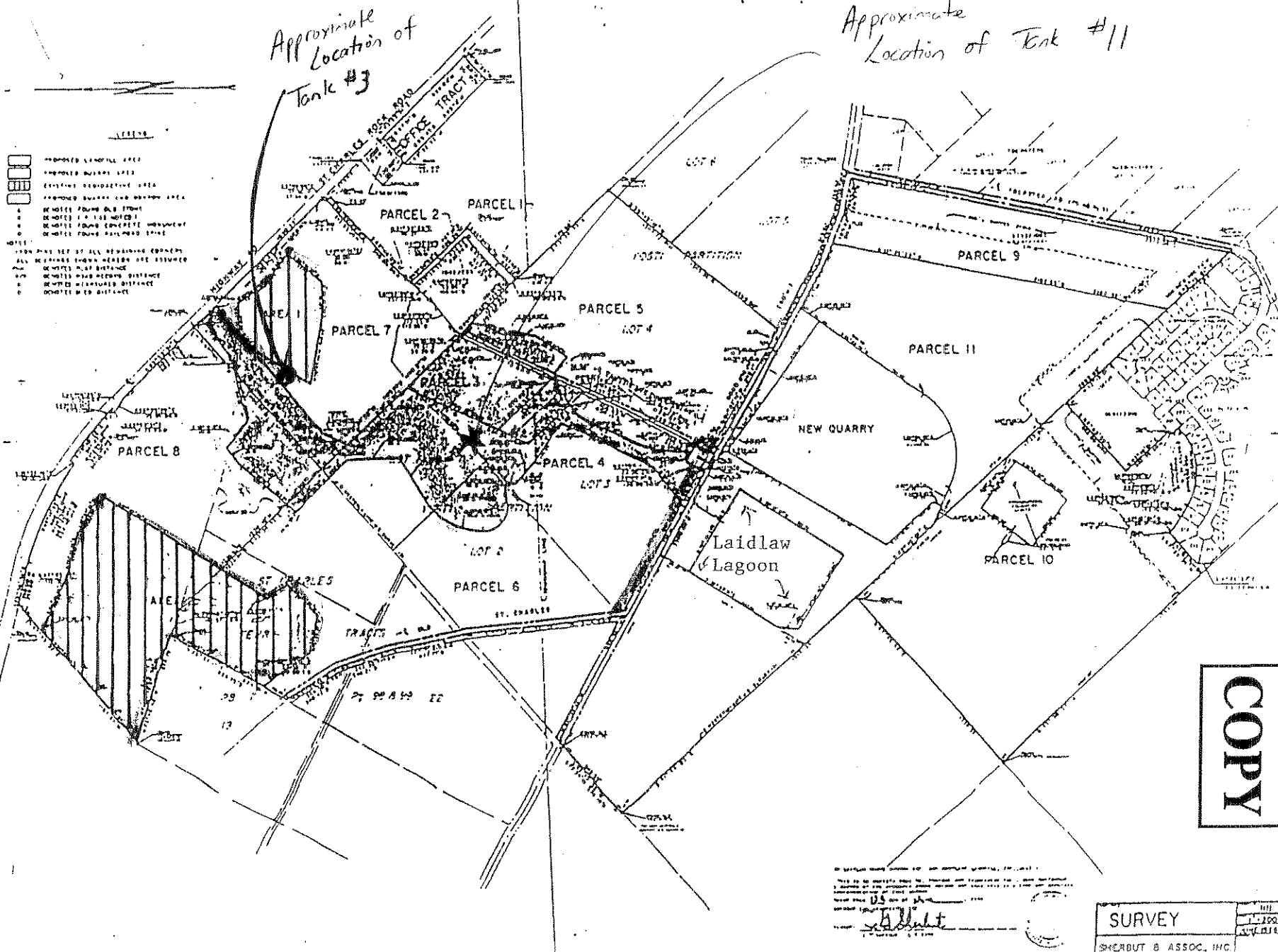
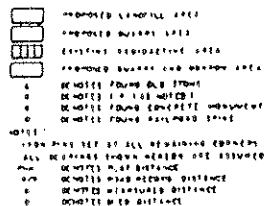


TANK # 7- Sidewalls, Endcaps & Bottom

OF LOTS 1, 2, 3, & 4 OF YOSTI P LION IN
U.S. SURVEY 131, PART OF LOTS 20 22 OF
ST CHARLES FERRY CO TRACTS 1 SURVEY
47 & 1934, PART OF U.S. SURVEYS 47, 131, 282
AND 729, ALL IN TOWNSHIPS 46
AND 47 NORTH, RANGE 5 EAST OF THE
1ST IN. PRINCIPAL MERIDIAN,
ST. LOUIS COUNTY, MISSOURI.

Approximate
Location of
Tank #3

Approximate
Location of Tank #11



Copy

SURVEY

SHERBUT & ASSOC., INC.

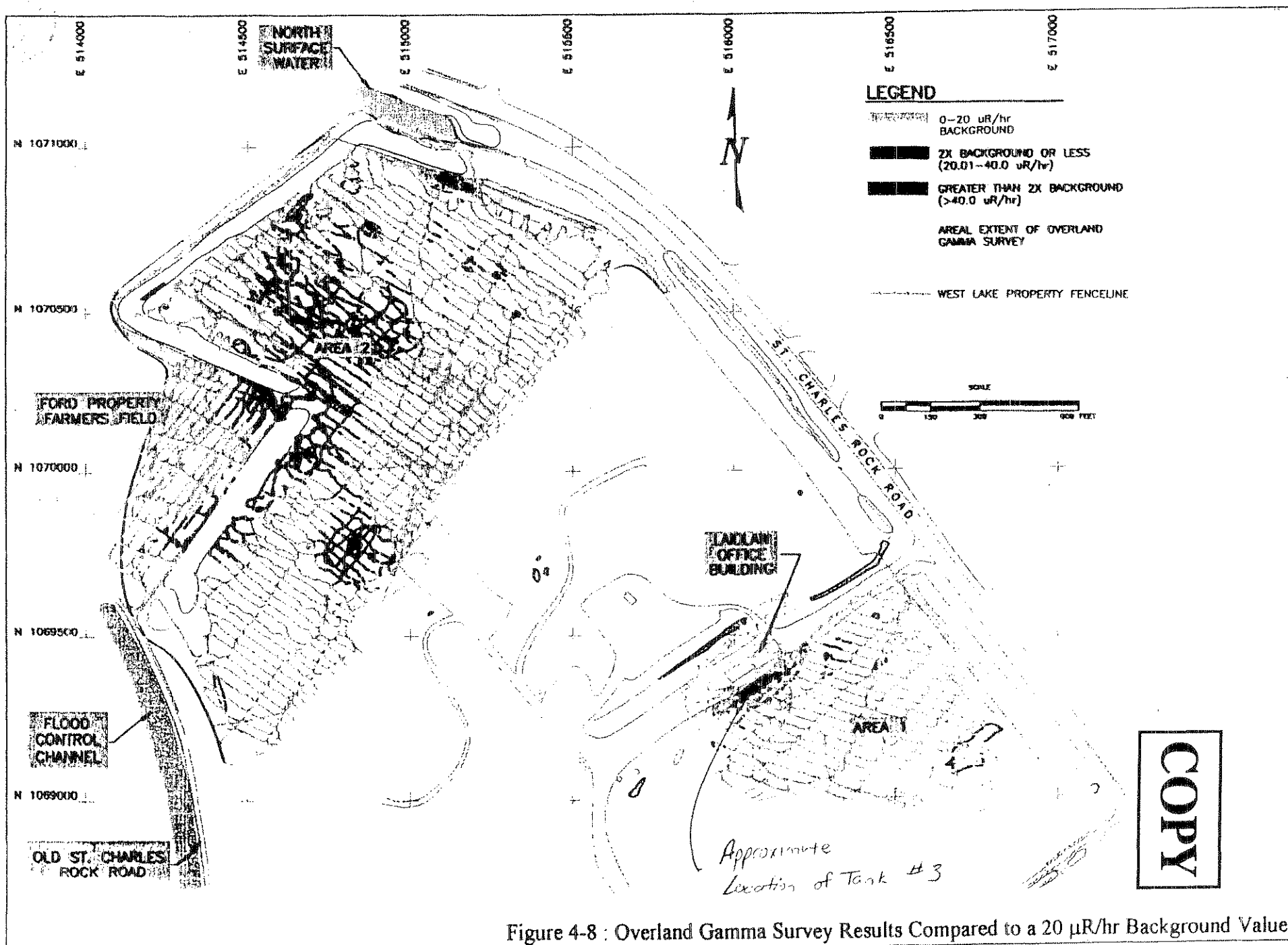


Figure 4-8 : Overland Gamma Survey Results Compared to a 20 $\mu\text{R/hr}$ Background Value

ADR

ST. LOUIS

P.O. Box 182

St. Charles, MO 63302

314-947-9963

Department of Natural Resources
ESP DIVISION : Anita Schroeter
P.O. BOX 176
Jefferson City, MO. 65102

March 18, 1994

Re: LU3874 WESTLAKE Quarry & Material Co.

Ms. Schroeter,

Per our previous conversation, the enclosed material is submitted for the Departments update regarding the recent environmental investigation activity.

During the early part of December 1993, four wells were installed in the excavation pits for tanks # 1, 4, 6 & 7. In order to provide a continuity with the current activity, the wells have been identified as follows:

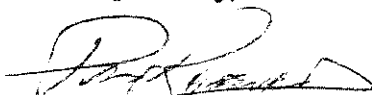
- # 1 WELL = Former Tank # 6
- # 2 WELL = Former Tank # 4
- # 3 WELL = Former Tank # 1
- # 4 WELL = Former Tank # 7

A topographic page identifying the locations is provided. Additionally, the schedule of the analytical summary data compiled from the well installations is included.

As previously indicated in our correspondence of February, activities have been delayed due to the adverse weather. Respectively, the data accumulation and proper statistical review, remains in the "developing stages". We will continue to conduct on-site activities to complete the supportive data and documentation required for producing a responsive remedial plan.

The Department may expect additional submittals within 30 days. If you should have any questions regarding the enclosed information, please contact my office directly.

Respectfully,



Patrick Reeves

RE: LU 3874

Ms. Schroeter,

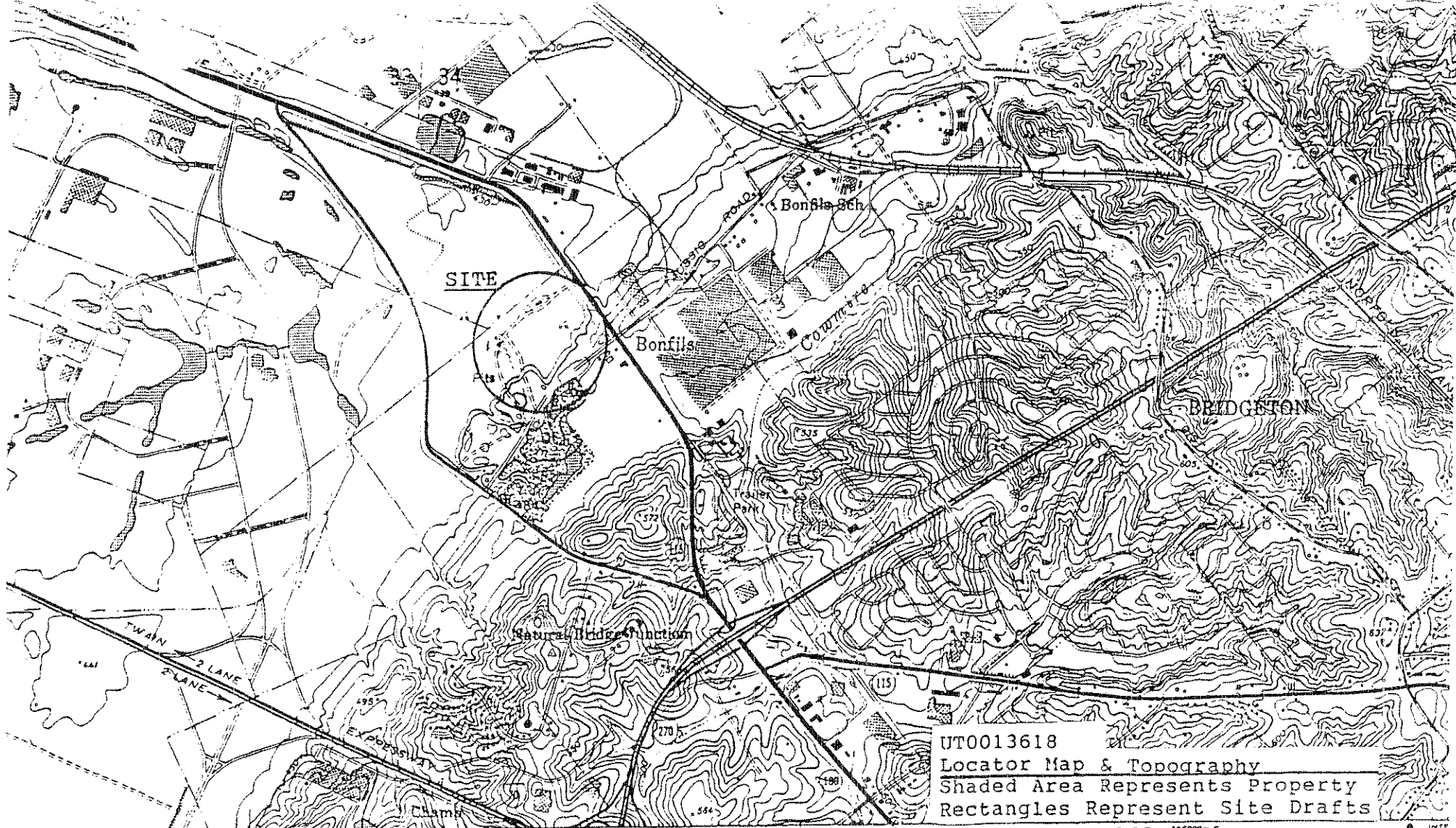
As indicated, several areas of our characterization are presently being compiled. I am sure you can agree with the reasonable basis of delay.

The reports being presented to your office by April 18, 1994 will reflect the following:

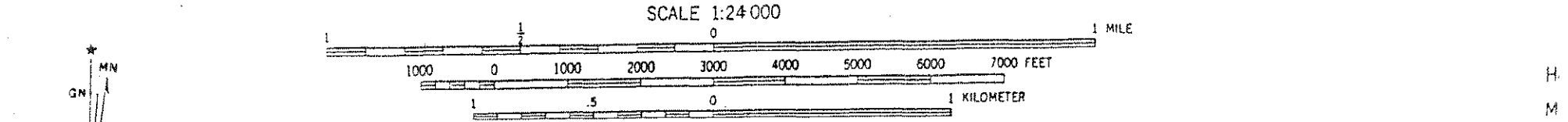
- Preliminary Assessment Observations
- Drilling and Sampling Observations
- Well Pump-Test Results
- Well Level Monitoring Report
- Well to MSL Comparison Report
- 1st Quarter Analytical Data
- Investigation Protocol Intent
- Viable Remedial Options Assessment
- Pilot Study /Bench Test Schedules
- General Project Overview Report.

Respectfully,

Patrick Reeves



510'000 FEET 27°30' 121 2.5 MI. TO MO. 140 ST. LOUIS (CITY HALL) 19 MI. (CREVE COEUR) 7961 III NW 1.7 MI. TO MO. 140 724 25' R. 5 E. 125000m E 3 MI. KIRKWOOD

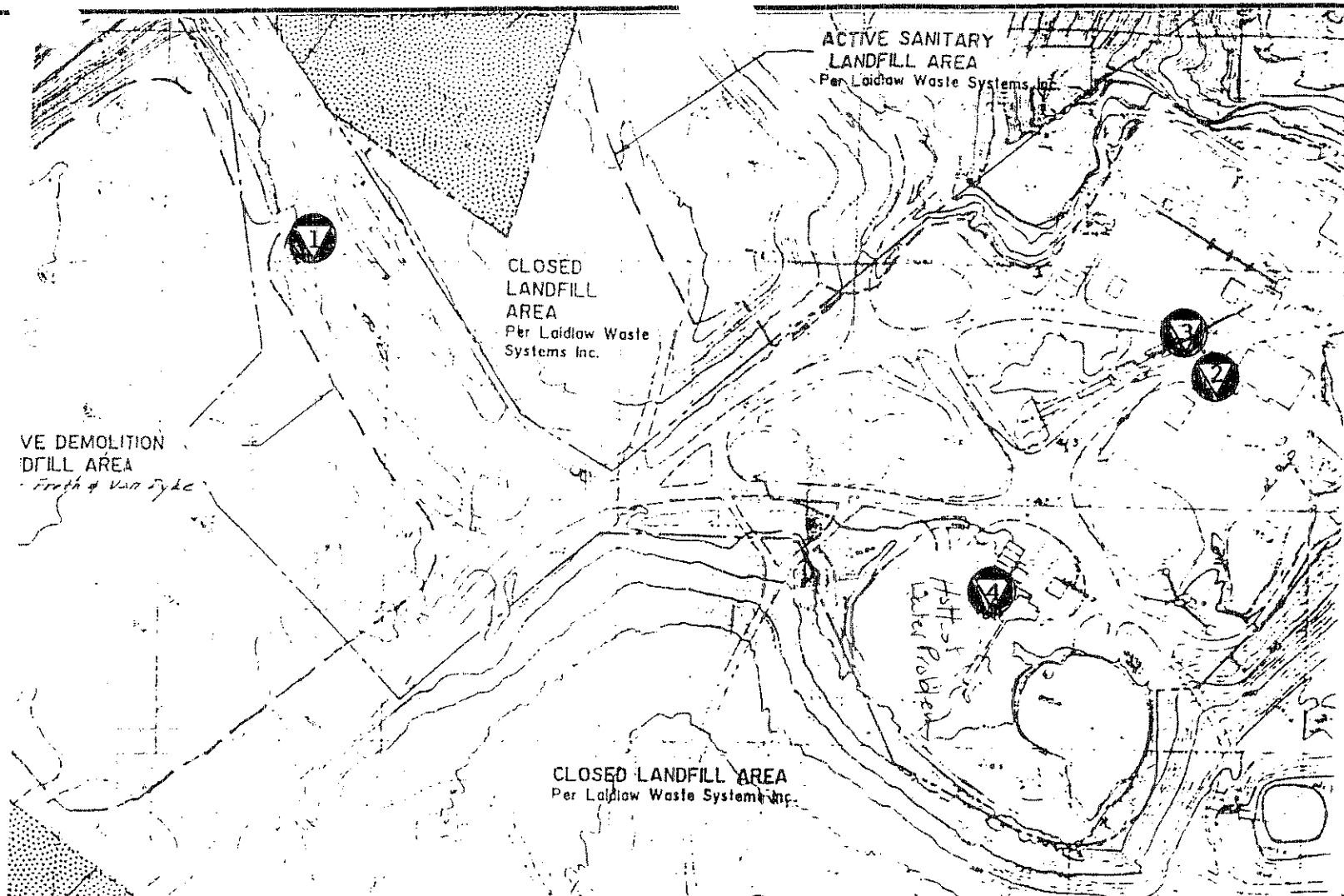


CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
AND BY THE DIVISION OF RESEARCH AND TECHNICAL INFORMATION
MISSOURI DEPARTMENT OF NATURAL RESOURCES, ROLLA, MISSOURI 65401
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

QUADRANGLE LOCATION

To place on the predicted North American Datum 1983,
move the projection lines 2 meters south and



WESTLAKE COMPANIES
13570 St. Charles Rock Road
Bridgeton, No. 63044

SCALE

APPROVED BY

DRAWN BY

DATE

12/20/93

REVISED

P/R

INTERIM MONITORING WELL LOCATIONS

DRAWING NUMBER

LU 3874

Westlake Quarry & Material Company

Analytical Summary

		<u>Mtx</u>	<u>BZ</u>	<u>TL</u>	<u>EB</u>	<u>XY</u>	<u>TBTX</u>	<u>TPH</u>
--	--	------------	-----------	-----------	-----------	-----------	-------------	------------

Well # 1

CR	S	1.5	11.0	10.1	75.	97.6	128
DR	S	N/D	N/D	N/D	N/D	N/D	6
DR	S	.065	.055	.037	.094	.251	9
15	W	.082	.061	.052	.256	.451	N/D
22	W	.076	.050	.037	.175	.338 ⁰²	N/D

Well # 3

CR	S	N/D	.003	.006	.033	.044	477
15	W	N/D	N/D	N/D	N/D	N/D	N/D
22	W	N/D	N/D	.002	.007	.009	N/D

Abbreviations

CR Closure Report
DR Drilling Sample
15 Sample Date December 15, 1993
22 Sample Date December 22, 1993
MTX Matrix (soil /water)
TPH Total Petroleum Hydrocarbons

BZ Benzene
TL Toluene
EB Ethylbenzene
XY Xylene
TBTX Total BETX

All data has been converted to parts per million (ppm).

LU 3874

Westlake Quarry & Material Company

Analytical Summary

Mtx BZ TL EB XY TBTX TPH

Well # 2

CR	S	N/D	N/D	.160	.700	.860	2753
DR	S	N/D	N/D	N/D	N/D	N/D	2354
DR	W	N/D	N/D	.005	.020	.025	27
15	W	N/D	N/D	N/D	.012	.012	19
15	S	.003	.016	.007	N/D	.027	26
22	W	N/D	N/D	.002	.007	.009	N/D

Well # 4

CR	S	.131	.240	4.04	4.26	8.67	13,326
DR	S	.140	.030	3.94	.485	4.595	26,225
DR	W	140.	100.	1402.	952.	2595.	661,935
22	W	70.	65.	1222.	762.	2120.	748,593

Abbreviations

CR Closure Report
DR Drilling Sample
15 Sample Date December 15, 1993
22 Sample Date December 22, 1993
MTX Matrix (soil & water)
TPH Total Petroleum Hydrocarbons

BZ Benzene
TL Toluene
EB Ethylbenzene
XY Xylene
TBTX Total BTEX

All data has been converted to parts per million (ppm).



Layne-Western Company, Inc.

A Layne Company
2399 Cassens Drive • Fenton, Missouri 63026

FIELD BORING LOG

Boring No. T 2 W D

Project Port Panner

Job No. 661424

Date 12-9-93

Location West Lake

Crew Jimmy + Pete

Drilling Method:



HSA



CFA



Rotary Wash



Rock Coring



Drilling Fluid

DEPTH, ft.		DESCRIPTION	Sample			SPT Blows N/6"
From	To		Type	Depth, ft.	Recovery	
0	3'	Rock Base	SS	14-17		2-2-3-3
3'	10	Dark Grey silt Clay	SS	12-14		1-2-3-4
10	26	Brown silt Clay	SS	14-16		1-3-3-3
26	43 1/2	Brown silt Clay	SS	16-18		2-5-8-10
	43 1/2	Rock.	SS	18-20		2-3-4-4
		3-4' x 10' - 10' silt screen	SS	20-22		1-2-4-4
		1-4' x 5' - Riser	SS	22-24		3-3-5-5
		1-4' x female Plug	SS	24-26		1-4-2-2
		1-15" Locking Cap.	SS	26-28		3-3-5-8
		11 Bags of sand	SS	28-30		3-5-3-3
		1 Bag Bentonite	SS	30-32		2-4-11-11
		4 Bag Grout				

WATER LEVEL OBSERVATIONS	NOTES	Piezometer Installed: <input type="checkbox"/> No <input type="checkbox"/> Yes - Depth <u>43 1/2</u> ft.
During Drilling <u>16</u> ft.		
At Completion _____ ft.		
After _____ hrs. _____ ft.		
After _____ hrs. _____ ft.		
After _____ hrs. _____ ft.		



Layne-Western Company, Inc.

A Layne Company

2399 Cassens Drive • Fenton, Missouri 63026

FIELD BORING LOG

Boring No. 1-4 D

Project Port P... Job No. 161124 Date 12-11-93

Location West Lake Crew ...

Drilling Method: ☐ HSA ☐ CFA ☐ Rotary Wash ☐ Rock Coring ☐ Drilling Fluid

DEPTH, ft.		DESCRIPTION	Sample			SPT Blows N/6"
From	To		Type	Depth, ft.	Recovery	
0	1'	Rock	SS	11-12		2-2-3-4
4	10'	Dark silt clay	SS	12-14		1-2-2-3
10	21'	Dark silt clay	SS	14-16		1-2-1-2
21	36'	Brown sand & silt	SS	16-18		1-2-2-
36	47 1/2'	Gr. to L. silt	SS	18-20		1-3-5-7
	47 1/2'	Rock	SS	20-22		15-5-7
		2-4" - 10" slot screen	SS	22-24		2-3-4-4
		1-4" x 5" 10 slot screen	SS	24-26		2-3-3-4
		1-4" x 10" screen	SS	26-28		5-9-8-5
		1-4" fine mesh screen	SS	28-30		3-4-5-6
		1-4" fine mesh screen	SS	30-32		3-3-5-5
		20 bag sand				
		1 bag Portland				
		3 bag cement				

WATER LEVEL OBSERVATIONS	NOTES	Piezometer Installed: <input type="checkbox"/> No <input type="checkbox"/> Yes - Depth <u>47' 10"</u> ft.
During Drilling _____ ft.		
At Completion _____ ft.		
After _____ hrs. _____ ft.		
After _____ hrs. _____ ft.		
After _____ hrs. _____ ft.		

**SUMMARY OF RADIOLOGICAL
SURVEYS PERFORMED AT
WELL #1 AND WELL #2
WESTLAKE - UST DRILLING PROJECT
BRIDGETON, MO.**

R.M. WESTER & ASSOCIATES, INC.

215 INDACOM DRIVE • ST. PETERS, MISSOURI 63376
(314) 928-9628 • FAX 928-9857

"SPECIALIZING IN YOUR RADIATION SAFETY NEEDS"

Westlake UST Drilling Project

SUMMARY:

On December 8 and 9, 1993, the drilling of two sample wells was conducted on the Westlake property in Bridgeton, MO. Two nearby areas are known to be radioactively contaminated and because of the possibility of migration of contaminants through the soil, each well-site was monitored for radioactive contamination. The wells were being installed to monitor the soil in the immediate area, and sample corings were obtained at various levels throughout the placement of the wells. Each well was located in the area adjacent to where fuel/petroleum tanks had once been buried. Both tanks had been excavated and removed earlier.

Well #1 was placed approximately 350 yards from the entrance point at St. Charles Rock Road. Prior to the commencement of drilling operations, a radiological survey of the area of the well and the adjacent area was conducted to establish background levels. These results were:

5 - 6 μ R/hr & 0.02 cpm

During drilling operations, all soil moved to the surface by the auger was surveyed periodically. In addition, samples were obtained at the following depths:

Sample #1	18-20 feet
Sample #2	22-24 feet
Sample #3	26-28 feet
Sample #4	28-30 feet
Sample #5	30-32 feet
Sample #6	32-34 feet

Each of these samples were also surveyed, and a small amount of each sample was added to a composite sample for later analysis in the lab.

After completion of the necessary drilling and sampling, a well was installed to allow future monitoring. All equipment used in the initial drilling and sampling and in the installation of the well was surveyed.

Results from all the surveys at the jobsite revealed no radiation or contamination above background levels. The composite of the soil removed and analyzed in the lab (MCA analysis) revealed energy levels and a spectrum consistent with known non-contaminated soil.

Westlake UST Drilling Project

Well #2 was placed to the north of an equipment maintenance building at the site. Prior to the commencement of drilling operations, a radiological survey of the area of the well and the adjacent area was conducted to establish background levels. These results were:

3 - 4 μ R/hr & 0.02 cpm

During drilling operations, all soil moved to the surface by the auger was surveyed periodically. In addition, samples were obtained at the following depths:

Sample #1	10-12 feet
Sample #2	12-14 feet
Sample #3	14-16 feet
Sample #4	16-18 feet
Sample #5	18-20 feet
Sample #6	20-22 feet
Sample #7	22-24 feet
Sample #8	24-26 feet
Sample #9	26-28 feet
Sample #10	28-30 feet
Sample #11	30-32 feet

Each of these samples were also surveyed, and a small amount of each sample was added to a composite sample for later analysis in the lab.

All equipment used in the initial drilling and sampling and in the installation of the well was surveyed.

Results from all the surveys at the jobsite revealed no radiation or contamination above background levels. The composite of the soil removed and analyzed in the lab (MCA analysis) revealed energy levels and a spectrum consistent with known non-contaminated soil.



2810 Clark Avenue • St. Louis, MO 63103-2574 • (314) 531-8080 • FAX (314) 531-8085

December 10, 1993
Invoice No. 35518
Lab No. 93D-0439

ADR Saint Louis
P.O. Box 182
Saint Charles, Missouri 63302

ATTENTION: Pat Reeves

REPORT OF ANALYSIS

SAMPLE IDENTIFICATION: Two (2) samples submitted as follows:

Sample #1 - WLG-C; Soil-sandy/silt and clay
Sample #2 - WLG-W; Water-translucent

RESULTS: Sample #1-mg/kg Sample #2-mg/L

EPA METHOD 8020

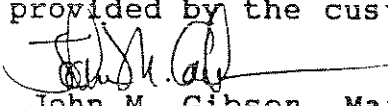
PARAMETER	Sample #1	Sample #2	MDL
Benzene	N.D.	0.065	0.002
Toluene	N.D.	0.055	0.002
Ethylbenzene	N.D.	0.037	0.002
m,p-Xylenes	N.D.	0.036	0.002
o-Xylene	N.D.	0.058	0.002

EPA METHOD 418.1

PARAMETER	Sample #1	Sample #2	MDL
TPH	6	9	5

N.D. - Analyte not detected
MDL - METHOD DETECTION LIMIT

Identification of tested specimens was provided by the customer.


John M. Gibson, Manager
Organic Chemistry



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SEE REVERSE FOR CONDITIONS



MEMBERS



2810 Clark Avenue • St. Louis, MO 63103-2574 • (314) 531-8080 • FAX (314) 531-8085

December 12, 1993
Invoice No. 35695
Lab No. 93D-0442

ADR Saint Louis
P.O. Box 182
Saint Charles, Missouri 63302

ATTENTION: Pat Reeves

REPORT OF ANALYSIS

SAMPLE IDENTIFICATION: Two (2) samples submitted as follows:

Sample #1 - WLWO-W, water, 12/10/93
Sample #2 - WLD-SC; clay-dirt, 12/10/93

RESULTS: Sample #1-mg/L; Sample #2-mg/kg

EPA METHODS 8240 (Sample #1) and 8020 (Sample #2)

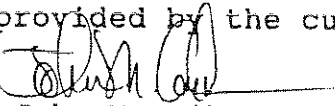
PARAMETER	Sample #1	Sample #2	MDL
Benzene	N.D.	N.D.	0.002
Toluene	N.D.	N.D.	0.002
Ethylbenzene	0.005	N.D.	0.002
m,p-Xylenes	0.011	N.D.	0.002
o-Xylene	0.009	N.D.	0.002

EPA METHOD 418.1

PARAMETER	Sample #1	Sample #2	MDL
TPH	27	2354	5

N.D. - Analyte not detected
MDL - METHOD DETECTION LIMIT

Identification of tested specimens was provided by the customer.


John M. Gibson, Manager
Organic Chemistry



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MEMBERS



2810 Clark Avenue • St. Louis, MO 63103-2574 • (314) 531-8080 • FAX (314) 531-8085

ADR/Saint Louis
P.O. Box 182
Saint Charles, Missouri 63302

December 17, 1993
Invoice No. 35698
Lab No. 93D-0450
Site: Westlake Bridgeton

ATTENTION: Pat Reeves

REPORT OF ANALYSIS

SAMPLE IDENTIFICATION: Six (6) samples submitted as follows:

Sample #1 - MW1-20', water, 12/15/93
Sample #2 - MW2-20', water, 12/15/93
Sample #3 - MW3-22', water, 12/15/93
Sample #4 - MW4-17.5', product, 12/15/93
Sample #5 - WLWO-2, soil composite, 12/15/93
Sample #6 - MW4S, soil, 12/15/93

RESULTS: mg/L Samples #1 - #4; mg/kg Samples #5 & #6

EPA METHOD 8240

PARAMETER	#1	#2	#3	#4	#5	#6	MDL
Benzene	0.082	N.D.	N.D.	140.0	N.D.	0.140	0.002
Toluene	0.061	N.D.	N.D.	100.0	0.003	0.030	0.002
Ethylbenzene	0.052	N.D.	N.D.	1402.5	0.016	3.490	0.002
m,p-Xylenes	0.104	N.D.	N.D.	655.0	0.007	0.305	0.002
o-Xylenes	0.152	0.012	N.D.	297.5	N.D.	0.180	0.002

EPA METHOD 418.1

PARAMETER	#1	#2	#3	#4	#5	#6	MDL
TPH	N.D.	19	N.D.	661935	26	26225	5

N.D. - NOT DETECTED

MDL - METHOD DETECTION LIMIT

Identification of tested specimens was provided by the customer.

John M. Gibson, Manager
Organic Chemistry



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MEMBERS



2810 Clark Avenue • St. Louis, MO 63103-2574 • (314) 531-8080 • FAX (314) 531-8085

ADR/Saint Louis
P.O. Box 182
Saint Charles, Missouri 63302

December 23, 1993
Lab No. 93D-0458
Site: Westlake Bridgeton

ATTENTION: Pat Reeves

REPORT OF ANALYSIS

SAMPLE IDENTIFICATION: Four (4) samples submitted as follows:

Sample #1 - MW1-23', water
Sample #2 - MW2-25.5', water
Sample #3 - MW3-28', water
Sample #4 - MW4-30', product/water

RESULTS: mg/L

EPA METHODS 8020 (Samples #1-#3) and 8240 (Sample #4)

PARAMETER	#1	#2	#3	#4*	MDL
Benzene	0.076	N.D.	N.D.	70.0	0.002
Toluene	0.050	N.D.	N.D.	65.0	0.002
Ethylbenzene	0.037	0.002	0.002	1222.5	0.002
m,p-Xylenes	0.065	0.002	N.D.	530.0	0.002
o-Xylenes	0.110	0.005	N.D.	232.5	0.002

EPA METHOD 418.1

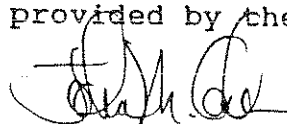
PARAMETER	#1	#2	#3	#4	MDL
TPH	N.D.	N.D.	N.D.	748593	5

* - All other 8240 parameters for this sample were N.D.

N.D. - NOT DETECTED

MDL - METHOD DETECTION LIMIT

Identification of tested specimens was provided by the customer.


John M. Gibson, Manager
Organic Chemistry



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MEMBERS

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Mel Carnahan, Governor • David A. Shorr, Director

DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

February 15, 1994

ESP FILE NO.
#LU3874

CERTIFIED MAIL #P144 644 831
RETURN RECEIPT REQUESTED

Mr. B. Whitaker
Westlake Companies
12976 St. Charles Rock Road
Bridgeton, MO 63044

Dear Mr. Whitaker:

RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO 63044

The Leaking Underground Storage Tank Unit of the MDNR (Missouri Department of Natural Resources) has not received the December 1993 Investigation Report or the other information requested in the January 10, 1994, letter (copy enclosed). Being the former owner and last operator of the closed tanks, it is your responsibility to take the necessary steps to ensure that the contamination is cleaned up (10CSR20-10.053) in a manner and method approved by the MDNR (10CSR20-10.060-10CSR20-10.067).

Previously, we were informed that Westlake Companies intended to cease operation as of December 31, 1993. If Westlake Companies plans to file or has filed bankruptcy, please note, the MDNR believes that the site characterization and corrective action plan obligation at this site are considered outstanding obligations owed to the department and request that any notice of bankruptcy filed (or previously filed) be sent to the Missouri Department of Natural Resources, Bankruptcy Coordinator, Receipts and Reporting, P.O. Box 176, Jefferson City, MO 65102.

Mr. B. Whitaker
February 15, 1994
Page Two

Please respond to this request within 30 days. If you have any questions, please do not hesitate to contact Anita Schroeter at the Leaking Underground Storage Tank Unit at 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY



C. Dean Martin
Acting Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

CDM:jlh

Enclosure

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office
Doug Nelson, Assistant Attorney General, Attorney General's Office
Karl Fett, Environmental Specialist, Permits Section, Water Pollution
Control Program
Mr. Pat Reeves, ADR/St. Louis, P.O. Box 182, St. Charles, MO 63302

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Mel Carnahan, Governor • David A. Shorr, Director

DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

January 10, 1994

ESP FILE NO.

#LU3874

Mr. B. Whitaker
Westlake Companies
12976 St. Charles Rock Road
Bridgeton, MO 63044

Dear Mr. Whitaker:

RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

The Leaking Underground Storage Tank Unit of the Missouri Department of Natural Resources has recently received and reviewed a letter dated December 6, 1993, from Pat Reeves of ADR/St. Louis. The cleanup levels submitted in the closure report are not acceptable at this time because coarse soil and sand is present. However, based on previous telephone conversations with Mr. Reeves, unusual groundwater conditions exist at this site. It has been indicated that this site might be incorporated into an EPA investigation regarding low levels of radioactive materials in groundwater. Please supply additional information on this matter as well as a name, address, and telephone number for the EPA Agent who is heading their investigation.

The only areas that may be excluded, as described in the December 6, 1993, letter from ADR/St. Louis, at this time is around tanks #2, #3, and #5.

The goal to implement an interim remedial system does indicate a positive step towards controlling the migration of remaining contamination. However, aggressive measures should be taken to complete the characterization of the site contaminants. Enclosed, for your assistance, is an order form available from MDNR that may assist you in this matter. Also, before a remedial system is implemented, a corrective action plan should be provided to this unit for approval.

In Missouri, a permit is required for almost every activity that can have an impact on the environment or the health of the state's citizens. Most activities associated with the remediation of leaking underground storage tanks may require at least one of the following permits: Air Pollution Permit (on-site treatment), Hazardous Waste Permit and Manifests (tank contents), Solid Waste Permit (waste oil), or Water Pollution (NPDES) Permit (for any site excavation or treatment). Before issuance of final closure, evidence must be presented that appropriate permits have either been issued or waived. Evidence may consist of a copy of the permit, a copy of the permit application, or a copy of the waiver letter. Permits may be obtained at the



RECYCLED PAPER

Mr. B. Whitaker
January 10, 1994
Page Two

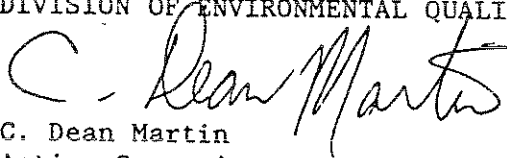
appropriate MDNR Regional Office. Please refer to the enclosed map for specific addresses and telephone numbers. If you have any questions concerning Water Pollution Permits, please refer to the enclosed Technical Bulletin "Water Pollution Control Permits for Fuel Spill Cleanups." If you have any questions about other permit issues, please call the appropriate regional office staff as shown on the enclosed regional office map.

Please supply this unit with a copy of the report, which summarizes the December 1993 investigation, by the end of January. Included with this report should be the information requested in the body of this letter.

If you have any questions, please do not hesitate to contact Anita Schroeter at the Leaking Underground Storage Tank Unit at 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY


C. Dean Martin
Acting Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

CDM:jlh

Enclosure

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office
Mr. Pat Reeves, ADR/St. Louis, P.O. Box 182, St. Charles, MO 63302
Karl Fett, Environmental Specialist, Permits Section, Water Pollution
Control Program

UNDERGROUND STORAGE TANK INFORMATION

Print date January 21, 1994

OWNER

ID# OW10412

Name

WEST LAKE QUARRY & MATERIAL CO

12976 ST CHARLES ROCK ROAD

County ST LOUIS

City

BRIDGETON

State Zip

MO 63044

Phone 314/739/1122

Type C-P- - -

OSA 1

FACILITY

Rec'd Date 04/14/85 JDs UTL 121

Name Same? N Num Sheets 3

WEST LAKE QUARRY & MATERIAL CO

13570 ST CHARLES ROCK ROAD

County ST LOUIS

City

BRIDGETON

State Zip

MO 63044

Num of Tanks 5

COPY

Name (contact) Same?

ROBERT COX

Title

SAFETY ENG

Phone 314/739/1122

Subsequent or amended form?

Name (Cert')

W.E. WHITAKER

Title

FRES

Signature

Date

12/29/92

=====

DNR ID STATUS	OLD YR	CAPACITY	CONSTR	INT' PRO	EXT' PRO	LST'USE	CLD	CERT
OWN' ID SUBSTANCE			PIPING			LST'AMT	INERT	INST
TNK LD & DATE	PIPE LD & DATE	TK CP DT	PI CP DTE	SPILL	OVER	%	CAB	

=====

1 T	82-	2000	S.	N.		03/26/93	P	
1 G.			G.	P.				0

2 T	81-	10000	S.	N.		03/26/93	P	
2 G.			G.	P.				0

3 C	78-	10000	S.	N.		/ /		
3 D.			E.	P.				0

4 T	72-	10800	S.	N.		03/26/93	P	
4 D.			B.	P.				0

5 T	72-	10000	S.	N.		03/26/93	P	
5 D.			B.	P.				0

6 T	77-	10000	S.	N.		03/26/93	P	
6 D.			E.	P.				0

===== MORE TANKS ON NEXT PAGE =====

A = After 5/8/86 STATUS B = Bare steel C = Current STATUS, concrete, cathodic
D = Diesel E = Empty F = Fiberglass or FRP G = Gas, Gov' or Gail
H = haz' Sub I = Used Oil K = Kerosene L = Local N = None
O = Other P = Permanently closed, or Petroleum S = Steel U = Unknown
ATG=auto tk gauge MTG>manual tk gauge VMW=vapor well GWW=gw well
BTT=gauge/tight test IIT=inv'/tight test Ith=inter'non FL30=restrict @ 30
SO95=shutoff @ 95% FL90=restrict @ 90% AL90=alarm @ 90
ALNI=alarm @ 1 min AUTO=auto shutoff. LLD=line leak detector

(CONT'D) TANKS FOR WEST LAKE QUARRY & MATERIAL CO.
Q 11B LT001261B WEST LAKE QUARRY & MATERIAL CO



DNR ID	STATUS	OLD YR	CAPACITY	CONSTR	INT' PRO	EXT' PRO	LAST USE	ELS	CERT
OWN' ID	SUBSTANCE			PIPING			LAST AMT	INERT	INER
INK LD & DATE	PIPE LD & DATE	TK CP DT	PI CP DIE	SPILL?	OVER	%	DAS		
7 C	60-	10000	S.	N.					
7 D.			B.	P.			0		
8 T	72-	1000	S.	N.			03/26/93	P.	
8 I.			B.	P.			0		
9 R	62-	10000	S.	N.			05/17/90	C	
9 F.ASPHALT OIL			B.	P.			0		
10 R	62-	10000	S.	E.			05/17/90	C	
10 P.ASPHALT OIL			B.	P.			0		
11 C	65-	10000	S.	N.					
11 D.			B.	P.			0		

A = After 5/8/85 STATUS B = Bare steel C = Current STATUS, concrete, cathodic
D = Diesel E = Empty F = Fiberglass or FRP G = Gas, Coy. or Galv
H = Haz' SUB I = Used Oil K = kerosene L = Local N = None
O = Other P = Permanently closed, or Petroleum S = Steel U = Unknown
ATG=auto tk gauge MTB=manual tk gauge VMW=vapor well GWW=GW well
GTT=gauge/tight test ITT=inv./tight test IM=intermon FL20=restrict @ 20
SO95=shutoff @ 95% FL90=restrict @ 90% AL90=alarm @ 90
ALM1=alarm @ 1 min AUIS=auto shutoff LLD=line leak detector

ET sure records for WEST LAKE QUARRY & MATERIAL CO UFG0013518

Closing firm and contact

PATRICK REEVES

ADR RT, 110118

7348 DALE AVE

100 WIND MEADOWS

NO 83117

Phn 314-545-4866

Comment REMOVED FROM SERVICE 1980

Cls # UD01255 Notice 05/15/90 Comp

Tanks 7,10

Letter dte 05/17/90 to EEP

Report dte 05/15/90 tank

map Y

BTX

soil

samples

100 yds

LSP#

sludge

TPH

bat

COPY
total 2

Closing firm and contact

PAT REEVES

ADR

PO BOX 188

ST CHARLES

MO 63302

Phn 314-747-7763

Comment 1-2000 GAL GAS, 1-10,000 GAL GAS, 1-10800 GAL DIESEL, 2-10,000 GAL DIESEL,
1-1000 GAL WASTE OIL

Cls # UD04504 Notice 03/23/92 Comp

Tanks 1,2,4,5,6,8

total 6

Letter dte 03/30/92 to EEP

Report dte

tank

map

BTX

soil

samples

100 yds

LSP#

sludge

TPH

bat

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Mel Carnahan, Governor • David A. Shorr, Director

DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

January 10, 1994

ESP FILE NO.
#LU3874

Mr. B. Whitaker
Westlake Companies
12976 St. Charles Rock Road
Bridgeton, MO 63044

Dear Mr. Whitaker:

RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

The Leaking Underground Storage Tank Unit of the Missouri Department of Natural Resources has recently received and reviewed a letter dated December 6, 1993, from Pat Reeves of ADR/St. Louis. The cleanup levels submitted in the closure report are not acceptable at this time because coarse soil and sand is present. However, based on previous telephone conversations with Mr. Reeves, unusual groundwater conditions exist at this site. It has been indicated that this site might be incorporated into an EPA investigation regarding low levels of radioactive materials in groundwater. Please supply additional information on this matter as well as a name, address, and telephone number for the EPA Agent who is heading their investigation.

The only areas that may be excluded, as described in the December 6, 1993, letter from ADR/St. Louis, at this time is around tanks #2, #3, and #5.

The goal to implement an interim remedial system does indicate a positive step towards controlling the migration of remaining contamination. However, aggressive measures should be taken to complete the characterization of the site contaminants. Enclosed, for your assistance, is an order form available from MDNR that may assist you in this matter. Also, before a remedial system is implemented, a corrective action plan should be provided to this unit for approval.

In Missouri, a permit is required for almost every activity that can have an impact on the environment or the health of the state's citizens. Most activities associated with the remediation of leaking underground storage tanks may require at least one of the following permits: Air Pollution Permit (on-site treatment), Hazardous Waste Permit and Manifests (tank contents), Solid Waste Permit (waste oil), or Water Pollution (NPDES) Permit (for any site excavation or treatment). Before issuance of final closure, evidence must be presented that appropriate permits have either been issued or waived. Evidence may consist of a copy of the permit, a copy of the permit application, or a copy of the waiver letter. Permits may be obtained at the

Mr. B. Whitaker
January 10, 1994
Page Two

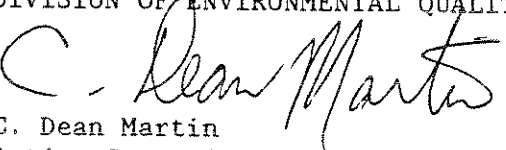
appropriate MDNR Regional Office. Please refer to the enclosed map for specific addresses and telephone numbers. If you have any questions concerning Water Pollution Permits, please refer to the enclosed Technical Bulletin "Water Pollution Control Permits for Fuel Spill Cleanups." If you have any questions about other permit issues, please call the appropriate regional office staff as shown on the enclosed regional office map.

Please supply this unit with a copy of the report, which summarizes the December 1993 investigation, by the end of January. Included with this report should be the information requested in the body of this letter.

If you have any questions, please do not hesitate to contact Anita Schroeter at the Leaking Underground Storage Tank Unit at 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY


C. Dean Martin
Acting Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

CDM:jlh

Enclosure

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office
Mr. Pat Reeves, ADR/St. Louis, P.O. Box 182, St. Charles, MO 63302
Karl Fett, Environmental Specialist, Permits Section, Water Pollution
Control Program

ADR

ST. LOUIS

22/1993

P.O. Box 182

St. Charles, MO 63302

314-947-9963

Department of Natural Resources
E.S.P. Division- Ms. Schroeder
P.O. Box 176
Jefferson City, Mo.

65102

RE: ESP File
LU 3874

December 6, 1993

Ms. Schroeder,

Per our telecon of November, regarding the referenced ESP file;

Westlake Companies has authorized our firm to initiate current data compilation for possible interim remedial and site characterization. Based on the information provided in the Closure Report (June 14, 1993), the scope of our work is directed towards Tank # 4, 6 and 7, which indicate levels in excess of the soil clean-up levels of Figure Three rating.

As previously discussed, a mutual interest with your department is to exclude the four tanks, 1, 2, 3 and 5 from further action, unless there exists new information which may be determined during the interim investigation, as a basis for additional requirements.

During this month, a preliminary baseline of information regarding soil matrix, groundwater, the presence of petroleum hydro-carbons and bedrock location will be prepared. We shall forward a preliminary report with the new information sometime during the early part of January (94).

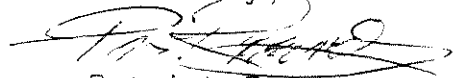
Our initial approach to current investigation shall be to conduct soil and water sampling for each of the designated tank sites, by means of split-spoon sampling with a hollow-stem auger. Upon completion of sampling, a 4" PVC monitoring well shall be placed to access water samples and/or monitor the vadose zone, during the course of future remedial efforts.

Based on the previously developed information and new data acquired during this phase of the project, an interim action effort may be developed to reduce existing levels below the established clean-up guidelines. However, we will make no assumptions on which criteria shall be utilized, until such time as the newly acquired information supports or revises the current site conditions, as the case may be.

We anticipate on-site activities to commence during the early part of December allowing adequate time to implement any reasonable effort towards the interim remedial action as may be required in discovery.

If you should have additional inquiry at this time, please contact me directly. Thank you again, for the continued efforts and assistance which have resulted in achieving compliance for our clients, involved in the UST program.

Sincerely,



Patrick Reeves

PR/pr



MISSOURI DEPARTMENT OF NATURAL RESOURCES
LAND RECLAMATION COMMISSION
PERMIT APPLICATION FOR INDUSTRIAL MINERAL RECLAMATION

P.O. BOX 176
JEFFERSON CITY, MO 65102

RECEIVED
OCT 19 1993

obtaining a permit for the first time, or for expansion or revision of a permitted mine's operations or reclamation plan.

NAME OF CORPORATION, COMPANY, PARTNERSHIP OR INDIVIDUAL West Lake Quarry and Material Company		DATE 10-14-93
ADDRESS 12976 St. Charles Rock Road	CITY JEFFERSON CITY	STATE MO ZIP CODE 63044
CONTACT PERSON W. E. Whitaker		TELEPHONE NUMBER (314) 739-1122
Check any that apply: <input type="checkbox"/> New Permit <input checked="" type="checkbox"/> Permit Renewal <input type="checkbox"/> Permit Revision <input type="checkbox"/> Permit Expansion Permit Number (Leave blank if new application): 46		

SITE NAME OR NUMBER	ACRES TO BE PERMITTED		TOTAL ACRES FOR ALL SITES
	INSTREAM	ALL OTHER	
Neely's Landing		27	
			27

Fees - Complete A or B

A - For sand and gravel operators mining less than 5,000 tons/year
Permit Fee \$100.00
Number of new acres _____ X \$35.00/acre \$ _____
B - For ALL other operations
Permit Fee \$350.00
Number of sites 1 X \$40.00/ site \$ 40.00
Number of new acres 0 X \$35.00/acre \$.00

Total fees

Bonding for all acreage EXCEPT instream - Complete A or B

A - For sand and gravel operators mining less than 5,000 tons/year
Number of new acres _____ X \$500.00/acre ... \$ _____
B - For ALL other open pit operations
Minimum per permit \$ 8,000.00
Acreage over 8 acres 19 X \$500.00/acre \$ 9,500.00
Number of new acres where topsoil will be sold
or discarded _____ X \$4,500.00/acre \$ N/A
Total bonding required \$ 17,500.00

if adequate bonding is already posted.

Id by applicant or by companies owned or partially

List all other Land Reclamation Commission controlled by applicant. If none, write "none"

NAME OF COMPANY

None

MINERAL COMMODITY	YEARS

For any of the above which have been served Cessation of Operations or Land Forfeiture, or have unabated Notices of Violation, please give:

PERMIT NUMBER	TYPE OF ACTION

I certify that all statements made on this application are correct, complete, and true, to the best of my knowledge.

SIGNATURE OF APPLICANT W. E. Whitaker TITLE President DATE 10-14-93
Appeared before me this 14th day of October, 19 93, W.E. Whitaker to me personally known, who executed the above as their free acts and deeds.

NOTARY PUBLIC EMBOSSEER SEAL	STATE <u>Missouri</u>	COUNTY (OR CITY OF ST. LOUIS) <u>St. Louis</u>
	SUBSCRIBED AND SWORN BEFORE ME, THIS <u>14th</u> DAY OF <u>October</u> 19 <u>93</u>	
	NOTARY PUBLIC SIGNATURE <u>Margaret G. Cusumano</u>	MY COMMISSION EXPIRES <u>11/5/94</u>
	NOTARY PUBLIC NAME (TYPED OR PRINTED) <u>MARGARET G. Cusumano</u>	

MARGARET G. CUSUMANO, Notary Public
STATE OF MISSOURI, ST. LOUIS COUNTY
MY COMMISSION EXPIRES 11-5-94

APPROVED BY (DIRECTOR'S REPRESENTATIVE) <u>[Signature]</u>	DATE APPROVED <u>1-7-94</u>	PERMIT NUMBER <u>46</u>	EXPIRATION DATE <u>12-31</u>
---	--------------------------------	----------------------------	---------------------------------



WEST LAKE COMPANIES
12976 ST. CHARLES ROCK ROAD
BRIDGETON, MISSOURI 63044
(314) 739-1122

MARK TWAIN BANK
8822 Ladue Road
St. Louis, MO 63124

CHECK NO.
DATE

80-340
810
011979
CHECK AMOUNT
\$*****390.00

10/19/93

10-14-93

THREE HUNDRED NINETY AND NO/100 DOLLARS *****

PAY
TO THE
ORDER •

MO DEPT OF NATURAL RESOURCES
LAND RECLAMATION COMMISSION
P O BOX 176
JEFFERSON CITY MO 65102

Donald D. Bunge
Margaret S. Cusumano

⑈018116⑈ ⑆081003408⑆8100410942⑈

Receipt # 5750
Date Issued 10/19/93
Date Mailed 10/19/93

INDUSTRIAL MINERAL
PERMIT APPLICATION CHECKLIST

Renewal

OPERATION:

West Lake Quarry

PERMIT NO.

46

I. APPLICATION

Date Received

10/19/93

Date Reviewed

1/7/94

Reviewer

HR

(waited for bond release)

- A. Applicant Name
B. Address
C. Phone Number
D. Acres & sites
E. Notarization
and Signature

II. FEES

- A. Permit Fees (\$350 > 5,000 T/Y) ; Amendment - N/A
(\$100 < 5,000 T/Y)
B. Acreage Fee (\$35.00/acre) ; Renewal - N/A
C. Site Fee (\$40/site) ; <5000 T/Y N/A

III. BONDING

In-Stream - N/A

- A. Applicant Name of Form ; Renewal* - N/A
B. Bond No.
C. Amount *Minimum bond
already received
D. Signed
1. Surety Bond
Power of Attorney
2. Certificate of Deposit
C.D. No. on Form
Automatically Renewable
FDIC Insured
Assigned to "State of MO"
E. All Bonding Accounted for in Bonding Ledger

V. SITE INFORMATION— ok

- A. Acreage
B. Location (Legal Description)
C. River or Stream ; Open-pit - N/A
D. Tons/Year ; Open-pit - N/A
E. Landowners
F. Right-to-Mine
G. Mineral rights owner

LAND RECLAMATION COMMISSION
STATE OF MISSOURI

P.O. BOX 176
JEFFERSON CITY, MISSOURI 65102
314-751-4041

Permit To Engage in Surface Mining

LAND RECLAMATION COMMISSION

ISSUES TO

WEST LAKE QUARRY AND MATERIAL COMPANY

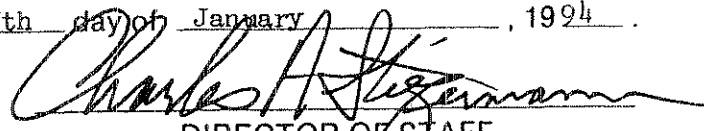
Pursuant to "The Land Reclamation Act," RSMo. Supp. 1990, and on conformity with the statements in the application, a permit is hereby granted to engage in surface mining of Limestone in the state of Missouri. The extent of the proposed mining operation(s) will be in 27 acres, more or less. The location of the operation(s) under this permit is as follows:

Renewal

CAPE GIRARDEAU COUNTY: S-28&29, T-33N, R-14E

This permit may be suspended or revoked upon violation of any or all of the conditions set forth in "The Land Reclamation Act," RSMo. Supp. 1990, or in such rules and regulations as are promulgated pursuant thereto by the Land Reclamation Commission.

IN WITNESS WHEREOF I have hereunto set my hand this 7th day of January, 1994.


DIRECTOR OF STAFF
Land Reclamation Commission

Permit No. 46
Effective Date 01-01-94
Expiration Date 12-31-94



West Lake Quarry & Material Company

12976 St. Charles Rock Rd.
Bridgeton, MO 63044
(314) 739-1122

COPY

W.E. Whitaker
President

July 30, 1993

Mr. Frederick J. Hutson
Mo. Department of Natural Resources
UST Unit
P.O. Box 176
Jefferson City, Missouri 65102

Re: Invoice #07149310412

Dear Mr. Hutson:

The following is a detailed explanation supporting the installment fee of \$45.00 for the above referenced invoice for West Lake Quarry and Material Company (OW10412).

1. Barnhart Quarry (Facility ID #UT0013614) has been sold. The four (4) tanks at that facility were removed and closure was issued by the Department of Natural Resources. The remaining installment fees were paid in full at the time of closure.

(2) Gray's Point Quarry (Facility ID #UT0013615) has been leased to Tower Rock Stone Company at P.O. Box 4248, Scott City, Missouri 63780. Our lease provides that Tower Rock Stone Company assume the responsibility for any remaining fee installments on the five (5) tanks and any future monitoring and/or removal if required. Therefore, you should direct any reference to these tanks to Tower Rock Stone Company.

3. Neely's Landing Quarry (Facility ID #UT0013616) has three (3) remaining underground tanks which are the responsibility of West Lake Quarry and Material Company and have been invoiced properly.

(4) West Lake Quarry and Material Company (Facility ID #UT0013617) was sold. The buyer of the quarry was Bellefontaine Quarry, Inc. at 14201 Lewis & Clark Blvd, Florissant, Missouri 63034. In our sale agreement, Bellefontaine Quarry assumed responsibility for the three (3) remaining tanks at that site. Two (2) tanks were removed and closure was received by the Department of Natural Resources prior to the sale to Bellefontaine Quarry. The sixth tank was at our asphalt plant which was sold to Maryon Industries, Inc. at 150 Weldon Parkway, Suite 103, St. Louis, Missouri 63043. Maryon Industries has agreed to accept responsibility for this tank in the sale agreement. Therefore, you should direct any reference to this tank to Maryon Industries.

Mr. Frederick J. Hutson
July 30, 1993
Page Two

COPY

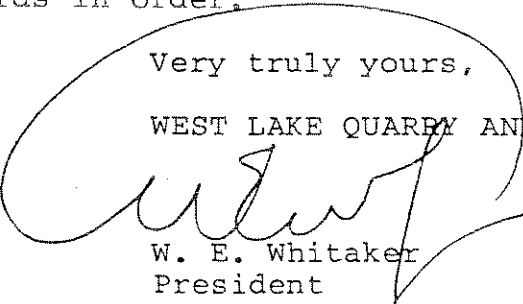
5. West Lake Quarry and Material Company (Facility ID #UT0013618) has no remaining tanks at this facility. Seven (7) tanks have recently been removed and are waiting closure by the Department of Natural Resources. All fees on these tanks were paid in full with our closure document per letter dated March 29, 1993 from Janet Duncan. Two (2) tanks were removed in 1990 and have received closure from the Department of Natural Resources.

In summary, West Lake is responsible for three (3) tanks at Neely's Landing Quarry and the installment fee of \$45.00, which you will find enclosed.

This is the fourth attempt that we have made to correct the Department of Natural Resources' records, therefore, I trust this will put our records in order.

Very truly yours,

WEST LAKE QUARRY AND MATERIAL COMPANY



W. E. Whitaker
President

WEW:gc

Enclosure

AUG 05 1993

I N V O I C E
For Underground Storage Tank Registration Fees

COPY

O W.E. WHITAKER
W WEST LAKE QUARRY & MATERIAL CO
N 12976 ST CHARLES ROCK ROAD
E BRIDGETON MO 63044
R OW10412 5 21 2

Make payable / Remit to: MO Dept. of Natural Resources
ATTN: UST Unit
P.O. Box 176
Jefferson City, MO 65102

Terms: net 30 days

Invoice # 07149310412

Questions? call (314) 751-7538

Facility Name and Address	Facility ID #	Tanks eligible for Registration fees	Registration Fee Installment
BARNHART QUARRY PO BOX 218 BARNHART MO 63012	UT0013614	4 tanks	\$60.00
GRAY'S POINT QUARRY RT 2 BOX 2130 SCOTT CITY MO 63780	UT0013615	5 tanks	\$75.00
NEELY'S LANDING QUARRY RT 4 BOX 104A JACKSON MO 63755	UT0013616	3 tanks	\$45.00
WEST LAKE QUARRY & MATERIAL CO 14201 LEWIS & CLARK BLVD FLORISSANT MO 63034	UT0013617	6 tanks	\$90.00
WEST LAKE QUARRY & MATERIAL CO 13570 ST CHARLES ROCK ROAD BRI TON MO 63044	UT0013618	9 tanks	\$135.00
Totals for: OW10412		Fee eligible tanks 27	Total due for all tanks \$2,025
WEST LAKE QUARRY & MATERIAL CO			Paid to date \$1,215
Pay EITHER the registration fee installment, OR the total balance due.		Installment \$405.00	Total balance due \$810

NOTES: If these fees have already been paid, or if corrections are needed, contact the UST unit at (314) 751-7538 to make corrections to payments. If there has been a change of status for tanks or facilities, an amended Notification Form IS REQUIRED. Contact the UST unit @ (314) 751-6822 to obtain a form. It is the responsibility of the Owner to notify the Department of changes to facility records. RETURN THIS FORM WITH PAYMENT.

pd 7-30-93 JMD
CK # 011722

ADR

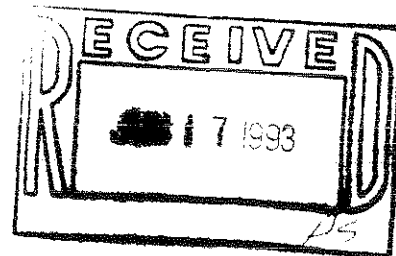
ST. LOUIS

P.O. Box 182

St. Charles, MO 63302

314-947-9963

DEPARTMENT OF Natural Resources
ESP Division- Anita Schroeter
P.O. Box 176
Jefferson City, Mo. 65102



June 14, 1993
RE: LU 3874

Ms. Schroeter,

Per the department's request, we are submitting the enclosed report. The Closure Report provides a substantial amount of data regarding the site and serves as the baseline for developing the appropriate response assessment.

Westlake Companies has presently authorized additional site investigation work. However, it is my recommendation to delay an assessment, until the department has had the opportunity to review the material enclosed.

Following your initial review, a conference or telephone call, would be appreciated, to discuss the investigation requirements and/or appropriate action regarding this unique site.

If you should have any questions regarding the report or site activities, please contact me directly. As always, we are grateful for the departments ability to resolve many of the time constraints to achieve closure, with their recommendations.

Respectfully,


Patrick Reeves

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

McLennan, Governor • David A. Shaw, Director

DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

May 5, 1993

ESP FILE NO.

#LU3874

Mr. Pat Reeves
ADR Environmental
P.O. Box 182
St. Charles, MO 63302

?
*WE ARE STILL
ADR/ST. LOUIS*

Dear Mr. Reeves:

RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

The Leaking Underground Storage Tank (LUST) Unit of the Missouri Department of Natural Resources has received and reviewed Spill Report #04223-KT-1612 and based on the information provided, a petroleum release has occurred. The LUST Unit will require a site assessment report to be submitted within 45 days.

If you have any questions, please do not hesitate to contact Greg Bennett at the Leaking Underground Storage Tank Unit at 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY



Larry P. Coen, CHMM, CPG
Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

LPC:jlh

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office



MISSOURI DEPARTMENT OF NATURAL RESOURCES
LAND RECLAMATION COMMISSION
PERMIT APPLICATION FOR INDUSTRIAL MINERAL MINES

P.O. BOX 176
JEFFERSON CITY, MO 65102

obtaining a permit for the first time, or for expansion or revision of a permitted mine's operations or reclamation plan.

NAME OF CORPORATION, COMPANY, PARTNERSHIP OR INDIVIDUAL West Lake Quarry and Material Company		DATE	
ADDRESS 12976 St. Charles Rock Road	CITY Bridgeton	STATE MO	ZIP CODE 63044
CONTACT PERSON W. E. Whitaker		TELEPHONE NUMBER (314) 739-1122	

Check any that apply:

☐ New Permit ☒ Permit Renewal ☐ Permit Revision ☐ Permit Expansion Permit Number (Leave blank if new application): 46

SITE NAME OR NUMBER	ACRES TO BE PERMITTED		TOTAL ACRES FOR ALL SITES
	INSTREAM	ALL OTHER	
Plant No. 1		2	
Neely's Landing		27	
Arrow Rock		6	
Franklin		12	
		47	47

Fees - Complete A or B

A - For sand and gravel operators mining less than 5,000 tons/year

Permit Fee \$100.00

Number of new acres _____ X \$35.00/acre \$ _____

B - For ALL other operations

Permit Fee \$350.00

Number of sites 4 X \$40.00/acre \$ 160.00

Number of new acres 0 X \$35.00/acre \$.00

Total fees \$ 510.00

Bonding for all acreage EXCEPT instream - Complete A or B

A - For sand and gravel operators mining less than 5,000 tons/year

Number of new acres _____ X \$500.00/acre ... \$ _____

B - For ALL other open pit operations

Minimum per permit \$ 8,000.00

Acreage over 8 acres 39 X \$500.00/acre \$ 19,500

Number of new acres where topsoil will be sold

or discarded _____ X \$4,500.00/acre \$ N/A

Total bonding required \$ 27,500

☒ Check here if adequate bonding is already posted.

List all other Land Reclamation Commission permits previously or currently held by applicant or by companies owned or partially controlled by applicant. If none, write "none" below.

NAME OF COMPANY	PERMIT NUMBER	MINERAL COMMODITY	YEARS
None			

For any of the above which have been served Cessation of Operations or Bond Forfeiture, or have unabated Notices of Violation, please give:

PERMIT NUMBER	TYPE OF ACTION

I certify that all statements made on this application are correct, complete, and true, to the best of my knowledge.

SIGNATURE OF APPLICANT

W. E. Whitaker President DATE December 22, 1992

Appeared before me this 22nd day of December, 19 92, W. E. Whitaker to me personally known, who executed the above as their free acts and deeds.

NOTARY PUBLIC EMBOSSEER SEAL	STATE <u>Missouri</u>	COUNTY (OR CITY OF ST. LOUIS) <u>St. Louis</u>
	SUBSCRIBED AND SWORN BEFORE ME, THIS <u>22nd</u> DAY OF <u>December</u> 19 <u>92</u>	
	NOTARY PUBLIC SIGNATURE <u>Margaret G. Cusumano</u>	MY COMMISSION EXPIRES <u>11-5-94</u>
	NOTARY PUBLIC NAME (TYPED OR PRINTED): <u>MARGARET G. Cusumano</u>	
APPROVED BY (DIRECTOR'S REPRESENTATIVE) <u>[Signature]</u>	DATE APPROVED <u>6-23-93</u>	PERMIT NUMBER <u>46</u>
		EXPIRATION DATE <u>12-31</u>



WEST LAKE COMPANIES

STATEMENT OF REMITTANCE

12976 ST. CHARLES ROCK RD., BRIDGETON, MO 63044

CHECK NO. 910474

VENDOR NO. 02035

INVOICE DATE	VENDOR INVOICE	P.O. NO.	GROSS AMOUNT	DISCOUNT	NET AMOUNT	
12-22-92	921222		510.00		510.00 510.00	FULL TOTAL



WEST LAKE COMPANIES
12976 ST. CHARLES ROCK ROAD
BRIDGETON, MISSOURI 63044
(314) 739-1122

MARK TWAIN BANK
8822 Ladue Road
St. Louis, MO 63124

12-23-92

CHECK NO. 010474
DATE 12-22-92
CHECK AMOUNT *****510.00

80-340
810

FIVE HUNDRED TEN AND NO/100 DOLLARS *****

PAY
TO THE
ORDER • STATE OF MISSOURI
LAND RECLAMATION COMMISSION
P.O. BOX 176
JEFFERSON CITY MO 65102

Donald R. Bump
James R. Hume

⑈016543⑈ ⑆081003408⑆8100410942⑈

Is it Ok to issue a receipt for this check? yes RC

Date Dec 24

Permit # 46

Receipt #5297
Issued 12-28-92
Mailed 12-29-92

LAND RECLAMATION COMMISSION

STATE OF MISSOURI

P.O. BOX 176
JEFFERSON CITY, MISSOURI 65102
314-751-4041

Permit To Engage in Surface Mining

LAND RECLAMATION COMMISSION

ISSUES TO

West Lake Quarry & Materials, Inc.

Pursuant to "The Land Reclamation Act," RSMo. Supp. 1990, and on conformity with the statements in the application, a permit is hereby granted to engage in surface mining of limestone in the state of Missouri. The extent of the proposed mining operation(s) will be in 47 acres, more or less. Renewal

The location of the operation(s) under this permit is as follows:

Saline County S-34, T-53N, R-20W - 12 acres

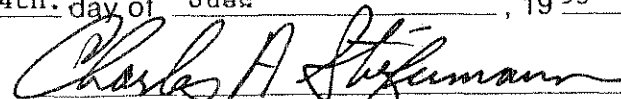
Saline County S-13, T-50N, R-19W - 6 acres

St. Louis County S-04, T-47N, R-05E - 2 acres

Cape Girardeau County S-28 & 29, T-33N, R-14E - 27 acres

This permit may be suspended or revoked upon violation of any or all of the conditions set forth in "The Land Reclamation Act," RSMo. Supp. 1990, or in such rules and regulations as are promulgated pursuant thereto by the Land Reclamation Commission.

IN WITNESS WHEREOF I have hereunto set my hand this 24th. day of June, 19 93.



DIRECTOR OF STAFF
Land Reclamation Commission

Permit No. 46
Effective Date 01/01/93
Expiration Date 12/31/93

COPY



MISSOURI DEPARTMENT OF NATURAL RESOURCES
LAND RECLAMATION COMMISSION
SITE INFORMATION FORM

To be completed for each separate area of disturbance associated with mining operations.

SITE NAME OR NUMBER Plant No. 1		PERMIT NUMBER 46	
COMPANY NAME West Lake Quarry and Material Company			
COUNTY St. Louis	1/4 SECTION		SECTION 4
TOWNSHIP 47N	RANGE 5E		ACRES 2
RIVER OR STREAM NAME (FOR IN-STREAM ACRES) N/A			
MINERAL COMMODITY Limestone		ESTIMATED TONS/YEAR (FOR GRAVEL SITES) N/A	

NAME OF LANDOWNER (ATTACH LIST IF MORE THAN ONE) West Lake Quarry and Material Company		
ADDRESS 12976 St. Charles Rock Road		
CITY Bridgeton	STATE Missouri	ZIP CODE 63044
SOURCE OF RIGHT TO MINE (CHECK ONE): <input type="checkbox"/> MINERAL DEED <input checked="" type="checkbox"/> WARRANTY DEED <input type="checkbox"/> OTHER (DESCRIBE):		DATE OF AGREEMENT
		<input type="checkbox"/> LEASE <input type="checkbox"/> VERBAL AGREEMENT

MINERAL RIGHTS OWNER (ATTACH LIST IF MORE THAN ONE) Same as above		
ADDRESS		
CITY	STATE	ZIP CODE
SOURCE OF RIGHT TO MINE (CHECK ONE): <input type="checkbox"/> MINERAL DEED <input type="checkbox"/> WARRANTY DEED <input type="checkbox"/> OTHER (DESCRIBE):		DATE OF AGREEMENT
		<input type="checkbox"/> LEASE <input type="checkbox"/> VERBAL AGREEMENT

NOTE: Each site must be shown on a map and be included in a public notice and an approved mine plan.



MISSOURI DEPARTMENT OF NATURAL RESOURCES
LAND RECLAMATION COMMISSION
MINE PLAN

P.O. BOX 176
JEFFERSON CITY, MO 65102

TYPE OF PLAN (CHECK ONE):

☐ SHORT TERM, FOR ONE PERMIT YEAR

☐ LONG TERM, FOR PERIOD THROUGH DATE:

DESCRIPTION OF SITE PRIOR TO LAND RECLAMATION COMMISSION PERMITTING (BY APPLICANT OR PRIOR OPERATOR), INCLUDING SOIL, VEGETATION AND TOPOGRAPHY.

This quarry site is in fairly flat terrain. The area was previously used for farming with approximately 20 feet of loamy clay soil overlying the rock. The area is bordered to the East by Old St. Charles Rock Road, which is a vacated road.

*No activity since - 1989
No mining has taken place.*

6-23-93 B.W.

OPERATION PLAN - 10 CSR 40-10.020(2)(D)1.

A. TOPSOIL

AVERAGE DEPTH OF TOPSOIL, PRIOR TO LAND RECLAMATION COMMISSION PERMITTING

not distinguishable INCHES

IS TOPSOIL TO BE SOLD OR DISCARDED OFFSITE?

☒ YES OR ☐ NO

DESCRIBE METHODS AND EQUIPMENT USED FOR TOPSOIL REMOVAL

Top 20 feet of overburden will be removed by a front end loader and end dump truck. No new area will be disturbed during this permit year.

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MISSOURI DEPARTMENT OF NATURAL RESOURCES

DESCRIBE METHODS AND EQUIPMENT USED FOR TOPSOIL STORAGE AND PROTECTION

The topsoil will be sold off site to an adjacent landfill.

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MISSOURI DEPARTMENT OF
LAND RECLAMATION COMMISSION

B. SPOIL

DESCRIBE METHODS AND LOCATION OF SPOIL PLACEMENT AND DISPOSAL

*No spoil will be generated**6.2393**w/BW.*

Overburden sold off site.

C. ACID MATERIALS

DESCRIBE METHODS AND EQUIPMENT USED FOR HANDLING ACID MATERIALS (IF NONE IS ANTICIPATED, WRITE "NONE" BELOW)

None

D. PIT INFORMATION (GIVE ALL DIMENSIONS IN FEET)

DESCRIBE LOCATION AND ORIENTATION OF PIT, IF NOT CLEAR ON SITE MAPS

See site map

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MAY 14 1991
MISSOURI
RECLAMATION COMMISSIONRECEIVED
DEC 23 1992
MISSOURI
RECLAMATION COMMISSION

YES NO

☐☒

Will any excavation be at or within fifty feet (50') of the right-of-way of any public road?

☐☒

Will any highwall consisting of unconsolidated materials be left within fifty feet of the right-of-way of any public road? (NOTE: For unconsolidated materials left in place, a slope of no more than forty degrees may start near the right of way, and in no case may the excavation be closer to the right of way than fifty feet or twenty-five feet plus one and one-half (1-½) times the depth of unconsolidated material, whichever is greater, unless a variance is granted by the Commission.)

☐☒

Will any excavation start at or within fifty feet (50') of any property line? (NOTE: If the answer is "yes", a safety barrier may be needed.)

RECLAMATION PLAN - 10 CSR 40-10.020(2)(D)2.

A. REVEGETATION (Attach additional sheets, if needed)

REVEGETATION MIX #1

PURPOSE OR LAND USE
1. AGRICULTURE
2. FORESTRY
3. MINING
4. MANUFACTURING
5. COMMERCE
6. RESIDENCE
7. PUBLIC USE
8. OTHER

B. SEEDING OR PLANTING TIME	
-----------------------------	--

7 RIBE METHODS AND EQUIPMENT TO BE USED FOR SEEDING OR PLANTING

1. Disc
2. Broadcast seed
3. Narrow per BW 623.73

Lime and fertilizer will be applied according to recommendations made, based on an analysis of soil texture and nutrients. Mulch will be applied to all slopes exceeding 5:1.

SEEDED SPECIES	POUNDS/ACRE	TREE OR SHRUB SPECIES	STEMS/ACRE
Fescue	16		
Ladino Clover	1		
per B.W. 623.93			

REVEGETATION MIX #2

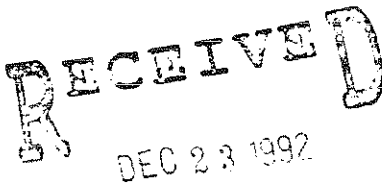
DATE	TIME	LOCATION	OBSERVER	SPECIES	COUNT	REMARKS

B. SEEDING OR PLANTING TIME

DESCRIBE METHODS AND EQUIPMENT TO BE USED FOR SEEDING OR PLANTING

RECLAMATION COMMISSION

Lime and fertilizer will be applied according to recommendations made, based on an analysis of soil texture and nutrients. Mulch will be applied to all slopes exceeding 5:1.

SEEDED SPECIES	POUNDS/ACRE	TREE OR SHRUB SPECIES	STEMS/ACRE
		<div style="text-align: center;">  </div>	

ATTACH ADDITIONAL SHEETS FOR ADDITIONAL SEED MIXES.

MISSOURI LAND
RECLAMATION COMMISSION

B. GRADING

DESCRIBE PROPOSED RECLAIMED TOPOGRAPHY, INCLUDING SLOPES

Permitted acreage will be placed in water reservoir category.

Slopes will be graded 3:1 and
traversable by farm equipment.

per B.W. 6-23-93

C. DESCRIBE THE GENERAL SEQUENCE AND TIMING OF THE FOLLOWING ACTIVITIES

GRADING

~~NA~~ Done within 12 months after
expiration of permit

REPLACEMENT OF TOPSOIL

~~NA~~

Same as above

per
B.W. 6-23-93

REVEGETATION

~~NA~~
N/A

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RECLAMATION COMMISSION

Done within 24 months
after expiration of permit

AVERAGE DEPTH OF REPLACED TOPSOIL (INCHES)

~~NA~~

12"

D. USE OF LAND WHEN RECLAIMED

Estimate acreage of each land use below, after reclamation

ESTIMATED ACRES:

Wildlife (forest or other habitat with livestock excluded)

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DEC 23 1992

Agricultural (pasture, cropland, and horticultural)

Development (residential, industrial, and recreational)

MISSOURI LAND
RECLAMATION COMMISSION

Water impoundments (for wildlife, agricultural, or development)

Mining not completed


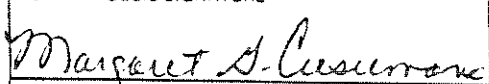

2

By my signature, I attest to the following:

1. All statements made on this Mine Plan Form are correct, complete, and true, to the best of my knowledge.
2. I or the company I am authorized to represent intend(s) to mine in accordance with this Mine Plan Form, and in accordance with the Missouri Land Reclamation Act, Sections 444.760 through 444.789, RSMo (Supp. 1990), and all rules, regulations, orders, decisions and permits of the Missouri Land Reclamation Commission pertaining to my company's surface mining operations.
3. I have obtained the approval of all landowner's for all proposed post-reclamation land uses.
4. I have a valid agreement with all landowners which gives me the right to grant access to the Director of the Missouri Land Reclamation Commission and his authorized representatives, and I grant such access, and further where I have no such right, I have attached signed affidavits from the landowners, granting such access.

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MAY 3 1993
MISSOURI LAND
RECLAMATION COMMISSION

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DEC 23 1992
MISSOURI LAND
RECLAMATION COMMISSION

SIGNATURE OF APPLICANT 		TITLE W. E. Whitaker President	DATE December 22, 1992
NOTARY PUBLIC EMBOSSEER SEAL	STATE Missouri	COUNTY (OR CITY OF ST. LOUIS) St. Louis	
	SUBSCRIBED AND SWORN BEFORE ME, THIS 22nd DAY OF December 1992		
	NOTARY PUBLIC SIGNATURE 	MY COMMISSION EXPIRES 11-5-94	USE RUBBER STAMP IN CLEAR AREA BELOW MARGARET G. CUSUMANO, Notary Public STATE OF MISSOURI, ST. LOUIS COUNTY MY COMMISSION EXPIRES 11-5-94
	NOTARY PUBLIC NAME (TYPED OR PRINTED) MARGARET G. Cusumano		
APPROVED BY (DIRECTOR'S REPRESENTATIVE) 		DATE APPROVED 6-23-93	PERMIT NUMBER 46



LAND RECLAMATION COMMISSION
SITE INFORMATION FORM

To be completed for each separate area of disturbance associated with mining operations.

SITE NAME OR NUMBER Franklin Quarry		PERMIT NUMBER 46	
COMPANY NAME West Lake Quarry and Material Company			
COUNTY Saline	1/4 SECTION SE	SECTION 34	
TOWNSHIP 53N	RANGE 20W	ACRES 12	
RIVER OR STREAM NAME (FOR IN-STREAM ACRES) N/A			
MINERAL COMMODITY Limestone		ESTIMATED TONS/YEAR (FOR GRAVEL SITES) N/A	

NAME OF LANDOWNER (ATTACH LIST IF MORE THAN ONE) Jim and Ann Franklin		
ADDRESS rural Route 1		
CITY Slater	STATE Missouri	ZIP CODE 65349
SOURCE OF RIGHT TO MINE (CHECK ONE): <input type="checkbox"/> MINERAL DEED <input type="checkbox"/> WARRANTY DEED <input type="checkbox"/> OTHER (DESCRIBE): _____		DATE OF AGREEMENT <input type="checkbox"/> LEASE <input checked="" type="checkbox"/> VERBAL AGREEMENT

MINERAL RIGHTS OWNER (ATTACH LIST IF MORE THAN ONE) Same as above		
ADDRESS		
CITY	STATE	ZIP CODE
SOURCE OF RIGHT TO MINE (CHECK ONE): <input type="checkbox"/> MINERAL DEED <input type="checkbox"/> WARRANTY DEED <input type="checkbox"/> OTHER (DESCRIBE): _____		DATE OF AGREEMENT <input type="checkbox"/> LEASE <input type="checkbox"/> VERBAL AGREEMENT

NOTE: Each site must be shown on a map and be included in a public notice and an approved mine plan.



MISSOURI DEPARTMENT OF NATURAL RESOURCES
LAND RECLAMATION COMMISSION
MINE PLAN

P.O. BOX 176
JEFFERSON CITY, MO 65102

TYPE OF PLAN (CHECK ONE):

☐ SHORT TERM, FOR ONE PERMIT YEAR
☐ LONG TERM, FOR PERIOD THROUGH DATE: SEE COMMENT BELOW

DESCRIPTION OF SITE PRIOR TO LAND RECLAMATION COMMISSION PERMITTING (BY APPLICANT OR PRIOR OPERATOR), INCLUDING SOIL, VEGETATION AND TOPOGRAPHY.

The mine lies in gently sloped, wooded terrain. Topsoil in the area is very thin and rocky. The area is bordered to the East by the Missouri River. This mine has been inactive since 1962. The quarry has filled with water and abounds with aquatic life. This site has been reclaimed by Mr. Franklin, the owner of the site, and by natural vegetation. West Lake requests that the reclamation bond for the permitted 12 acres be released by the Land Reclamation Commission.

OPERATION PLAN - 10 CSR 40-10.020(2)(D)1.

A. TOPSOIL

AVERAGE DEPTH OF TOPSOIL, PRIOR TO LAND RECLAMATION COMMISSION PERMITTING

N/A

INCHES

IS TOPSOIL TO BE SOLD OR DISCARDED OFFSITE?

☐ YES OR ☐ NO

DESCRIBE METHODS AND EQUIPMENT USED FOR TOPSOIL REMOVAL

N/A

DESCRIBE METHODS AND EQUIPMENT USED FOR TOPSOIL STORAGE AND PROTECTION

N/A

RECEIVED
MAY 15
1990
LAND RECLAMATION COMMISSION

B. SPOIL

DESCRIBE METHODS AND LOCATION OF SPOIL PLACEMENT AND DISPOSAL

N/A

C. ACID MATERIALS

DESCRIBE METHODS AND EQUIPMENT USED FOR HANDLING ACID MATERIALS (IF NONE IS ANTICIPATED, WRITE "NONE" BELOW)

N/A

D. PIT INFORMATION (GIVE ALL DIMENSIONS IN FEET)

DESCRIBE LOCATION AND ORIENTATION OF PIT, IF NOT CLEAR ON SITE MAPS

N/A

YES NO☐ ☐ Will any excavation be at or within fifty feet (50') of the right-of-way of any public road?☐ ☐ Will any highwall consisting of unconsolidated materials be left within fifty feet of the right-of-way of any public road? (NOTE: For unconsolidated materials left in place, a slope of no more than forty degrees may start near the right of way, and in no case may the excavation be closer to the right of way than fifty feet or twenty-five feet plus one and one-half (1-½) times the depth of unconsolidated material, whichever is greater, unless a variance is granted by the Commission.)☐ ☐ Will any excavation start at or within fifty feet (50') of any property line?
(NOTE: If the answer is "yes", a safety barrier may be needed.)

RECLAMATION PLAN - 10 CSR 40-10.020(2)(D)2.

A. REVEGETATION (Attach additional sheets, if needed)

REVEGETATION MIX #1	PURPOSE OR LAND USE	B. SEEDING OR PLANTING TIME
---------------------	---------------------	-----------------------------

DESCRIBE METHODS AND EQUIPMENT TO BE USED FOR SEEDING OR PLANTING

N/A

Lime and fertilizer will be applied according to recommendations made, based on an analysis of soil texture and nutrients. Mulch will be applied to all slopes exceeding 5:1.

SEEDED SPECIES	POUNDS/ACRE	TREE OR SHRUB SPECIES	STEMS/ACRE

REVEGETATION MIX #2	PURPOSE OR LAND USE	B. SEEDING OR PLANTING TIME
---------------------	---------------------	-----------------------------

DESCRIBE METHODS AND EQUIPMENT TO BE USED FOR SEEDING OR PLANTING

N/A

Lime and fertilizer will be applied according to recommendations made, based on an analysis of soil texture and nutrients. Mulch will be applied to all slopes exceeding 5:1.

SEEDED SPECIES	POUNDS/ACRE	TREE OR SHRUB SPECIES	STEMS/ACRE

ATTACH ADDITIONAL SHEETS FOR ADDITIONAL SEED MIXES.

B. GRADING

DESCRIBE PROPOSED RECLAIMED TOPOGRAPHY, INCLUDING SLOPES

N/A

C. DESCRIBE THE GENERAL SEQUENCE AND TIMING OF THE FOLLOWING ACTIVITIES

GRADING

N/A

REPLACEMENT OF TOPSOIL

N/A

REVEGETATION

N/A

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MAY 14 1988

MISSOURI LAND

AVERAGE DEPTH OF REPLACED TOPSOIL (INCHES) SEASON

N/A

D. USE OF LAND WHEN RECLAIMED

Estimate acreage of each land use below, after reclamation

ESTIMATED ACRES:

Wildlife (forest or other habitat with livestock excluded)

1

Agricultural (pasture, cropland, and horticultural)

Development (residential, industrial, and recreational)

Water impoundments (for wildlife, agricultural, or development)

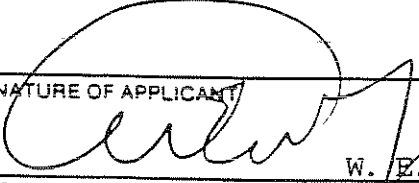
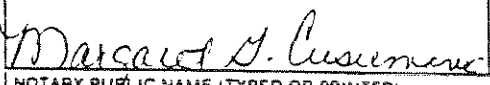

11

By my signature, I attest to the following:

1. All statements made on this Mine Plan Form are correct, complete, and true, to the best of my knowledge.
2. I or the company I am authorized to represent intend(s) to mine in accordance with this Mine Plan Form, and in accordance with the Missouri Land Reclamation Act, Sections 444.760 through 444.789, RSMo (Supp. 1990), and all rules, regulations, orders, decisions and permits of the Missouri Land Reclamation Commission pertaining to my company's surface mining operations.
3. I have obtained the approval of all landowner's for all proposed post-reclamation land uses.
4. I have a valid agreement with all landowners which gives me the right to grant access to the Director of the Missouri Land Reclamation Commission and his authorized representatives, and I grant such access, and further where I have no such right, I have attached signed affidavits from the landowners, granting such access.

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MISSOURI LAND
RECLAMATION COMMISSION

RECEIVED
DEC 23 1992
MISSOURI LAND
RECLAMATION COMMISSION

SIGNATURE OF APPLICANT 		TITLE President	DATE December 22, 1992
NOTARY PUBLIC EMBOSSEER SEAL	STATE Missouri	COUNTY (OR CITY OF ST. LOUIS) St. Louis	
	SUBSCRIBED AND SWORN BEFORE ME, THIS 22nd DAY OF December 1992		USE RUBBER STAMP IN CLEAR AREA BELOW MARGARET G. CUSUMANO, Notary Public STATE OF MISSOURI, ST. LOUIS COUNTY MY COMMISSION EXPIRES 11-5-94
	NOTARY PUBLIC SIGNATURE 	MY COMMISSION EXPIRES 11-5-94	
	NOTARY PUBLIC NAME (TYPED OR PRINTED) MARGARET G. Cusumano		
APPROVED BY (DIRECTOR'S REPRESENTATIVE) 		DATE APPROVED 6-23-93	PERMIT NUMBER 46



MISSOURI DEPARTMENT OF NATURAL RESOURCES
LAND RECLAMATION COMMISSION
SITE INFORMATION FORM

To be completed for each separate area of disturbance associated with mining operations.

NAME OR NUMBER Arrow Rock Quarry		PERMIT NUMBER 46	
COMPANY NAME West Lake Quarry and Material Company			
COUNTY Saline	1/4 SECTION SW		SECTION 13
TOWNSHIP 50N	RANGE 19W	ACRES 6	
RIVER OR STREAM NAME (FOR IN-STREAM ACRES) N/A			
MINERAL COMMODITY Limestone		ESTIMATED TONS/YEAR (FOR GRAVEL SITES) N/A	

NAME OF LANDOWNER (ATTACH LIST IF MORE THAN ONE) Jim and Ann Franklin		
ADDRESS Rural Route 1		
CITY Slater	STATE Missouri	ZIP CODE 65349
SOURCE OF RIGHT TO MINE (CHECK ONE): <input type="checkbox"/> MINERAL DEED <input type="checkbox"/> WARRANTY DEED <input type="checkbox"/> OTHER (DESCRIBE): _____ <input type="checkbox"/> LEASE <input checked="" type="checkbox"/> VERBAL AGREEMENT		DATE OF AGREEMENT

RECEIVED
DEC 23 1992

MINERAL RIGHTS OWNER (ATTACH LIST IF MORE THAN ONE) Same as above		
ADDRESS MISSOURI LAND RECLAMATION COMMISSION		
CITY RECEIVED	STATE	ZIP CODE
SOURCE OF RIGHT TO MINE (CHECK ONE): <input type="checkbox"/> MINERAL DEED <input type="checkbox"/> WARRANTY DEED <input type="checkbox"/> OTHER (DESCRIBE): _____ <input type="checkbox"/> LEASE <input type="checkbox"/> VERBAL AGREEMENT		DATE OF AGREEMENT

RECEIVED
JAN 14 1993
MISSOURI LAND RECLAMATION COMMISSION

NOTE: Each site must be shown on a map and be included in a public notice and an approved mine plan.



MISSOURI DEPARTMENT OF NATURAL RESOURCES
LAND RECLAMATION COMMISSION
MINE PLAN

P.O. BOX 176
JEFFERSON CITY, MO 65102

TYPE OF PLAN (CHECK ONE):

☐ SHORT TERM, FOR ONE PERMIT YEAR
☐ LONG TERM, FOR PERIOD THROUGH DATE: SEE COMMENT BELOW

DESCRIPTION OF SITE PRIOR TO LAND RECLAMATION COMMISSION PERMITTING (BY APPLICANT OR PRIOR OPERATOR), INCLUDING SOIL, VEGETATION AND TOPOGRAPHY.

The mine lies in gently sloped, wooded terrain. Topsoil in this area is very thin and rocky. The area is bordered to the East by the Missouri River. This mine has been inactive since 1962. The quarry has filled with water and abounds with aquatic life. The area adjacent to the quarry site has become overgrown with native grasses and has a stand of mature trees. West Lake requests that the reclamation bond for the permitted 6 acres at this site be released by the Land Reclamation Commission.

OPERATION PLAN - 10 CSR 40-10.020(2)(D)1.

A. TOPSOIL

AVERAGE DEPTH OF TOPSOIL, PRIOR TO LAND RECLAMATION COMMISSION PERMITTING

N/A INCHES

IS TOPSOIL TO BE SOLD OR DISCARDED OFFSITE?

☐ YES OR ☐ NO

DESCRIBE METHODS AND EQUIPMENT USED FOR TOPSOIL REMOVAL

N/A

DESCRIBE METHODS AND EQUIPMENT USED FOR TOPSOIL STORAGE AND PROTECTION

N/A

RECEIVED
MAY 14 1993
MISSOURI
LAND RECLAMATION COMMISSION

B. SPOIL

DESCRIBE METHODS AND LOCATION OF SPOIL PLACEMENT AND DISPOSAL

N/A

C. ACID MATERIALS

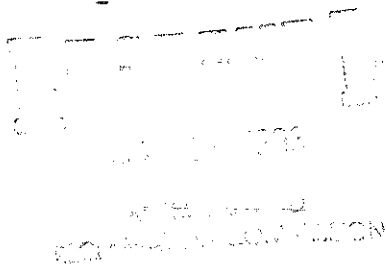
DESCRIBE METHODS AND EQUIPMENT USED FOR HANDLING ACID MATERIALS (IF NONE IS ANTICIPATED, WRITE "NONE" BELOW)

N/A

D. PIT INFORMATION (GIVE ALL DIMENSIONS IN FEET)

DESCRIBE LOCATION AND ORIENTATION OF PIT, IF NOT CLEAR ON SITE MAPS

N/A

**YES NO**☐ ☐ Will any excavation be at or within fifty feet (50') of the right-of-way of any public road?☐ ☐ Will any highwall consisting of unconsolidated materials be left within fifty feet of the right-of-way of any public road? (NOTE: For unconsolidated materials left in place, a slope of no more than forty degrees may start near the right of way, and in no case may the excavation be closer to the right of way than fifty feet or twenty-five feet plus one and one-half (1-1/2) times the depth of unconsolidated material, whichever is greater, unless a variance is granted by the Commission.)☐ ☐ Will any excavation start at or within fifty feet (50') of any property line?
(NOTE: If the answer is "yes", a safety barrier may be needed.)

RECLAMATION PLAN - 10 CSR 40-10.020(2)(D)2.

A. REVEGETATION (Attach additional sheets, if needed)

REVEGETATION MIX #1

PURPOSE OR LAND USE

B. SEEDING OR PLANTING TIME

DESCRIBE METHODS AND EQUIPMENT TO BE USED FOR SEEDING OR PLANTING

N/A

Lime and fertilizer will be applied according to recommendations made, based on an analysis of soil texture and nutrients. Mulch will be applied to all slopes exceeding 5:1.

SEEDED SPECIES	POUNDS/ACRE	TREE OR SHRUB SPECIES	STEMS/ACRE

REVEGETATION MIX #2

PURPOSE OR LAND USE

B. SEEDING OR PLANTING TIME

DESCRIBE METHODS AND EQUIPMENT TO BE USED FOR SEEDING OR PLANTING

N/A

Lime and fertilizer will be applied according to recommendations made, based on an analysis of soil texture and nutrients. Mulch will be applied to all slopes exceeding 5:1.

SEEDED SPECIES	POUNDS/ACRE	TREE OR SHRUB SPECIES	STEMS/ACRE
<p>RECEIVED</p> <p>MAY 14 2003</p> <p>RECLAMATION DIVISION</p>			

ATTACH ADDITIONAL SHEETS FOR ADDITIONAL SEED MIXES.

B. GRADING

DESCRIBE PROPOSED RECLAIMED TOPOGRAPHY, INCLUDING SLOPES

N/A

C. DESCRIBE THE GENERAL SEQUENCE AND TIMING OF THE FOLLOWING ACTIVITIES

GRADING

N/A

REPLACEMENT OF TOPSOIL

N/A

REVEGETATION

N/A

MAY 1, 1992

RECLAIMED TOPOGRAPHY

AVERAGE DEPTH OF REPLACED TOPSOIL (INCHES)

N/A

D. USE OF LAND WHEN RECLAIMED

Estimate acreage of each land use below, after reclamation

ESTIMATED ACRES:

Wildlife (forest or other habitat with livestock excluded)

1

Agricultural (pasture, cropland, and horticultural)

Development (residential, industrial, and recreational)

Water impoundments (for wildlife, agricultural, or development)

5

By my signature, I attest to the following:

1. All statements made on this Mine Plan Form are correct, complete, and true, to the best of my knowledge.
2. I or the company I am authorized to represent intend(s) to mine in accordance with this Mine Plan Form, and in accordance with the Missouri Land Reclamation Act, Sections 444.760 through 444.789, RSMo (Supp. 1990), and all rules, regulations, orders, decisions and permits of the Missouri Land Reclamation Commission pertaining to my company's surface mining operations.
3. I have obtained the approval of all landowner's for all proposed post-reclamation land uses.
4. I have a valid agreement with all landowners which gives me the right to grant access to the Director of the Missouri Land Reclamation Commission and his authorized representatives, and I grant such access, and further where I have no such right, I have attached signed affidavits from the landowners, granting such access.

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DEC 23 1992

MISSOURI LAND
RECLAMATION COMMISSION

RECEIVED
MAY 14 1994

MISSOURI LAND
RECLAMATION COMMISSION

SIGNATURE OF APPLICANT

W. E. Whitaker

TITLE

President

DATE

December 22, 1992

NOTARY PUBLIC EMBOSSEER SEAL

STATE

Missouri

COUNTY (OR CITY OF ST. LOUIS)

St. Louis

SUBSCRIBED AND SWORN BEFORE ME, THIS

22nd

DAY OF

December

1992

USE RUBBER STAMP IN CLEAR AREA BELOW

NOTARY PUBLIC SIGNATURE

MY COMMISSION
EXPIRES

11-5-94

MARGARET G. CUSUMANO, Notary Public
STATE OF MISSOURI, ST. LOUIS COUNTY
MY COMMISSION EXPIRES 11-5-94

NOTARY PUBLIC NAME (TYPED OR PRINTED)

MARGARET G. Cusumano

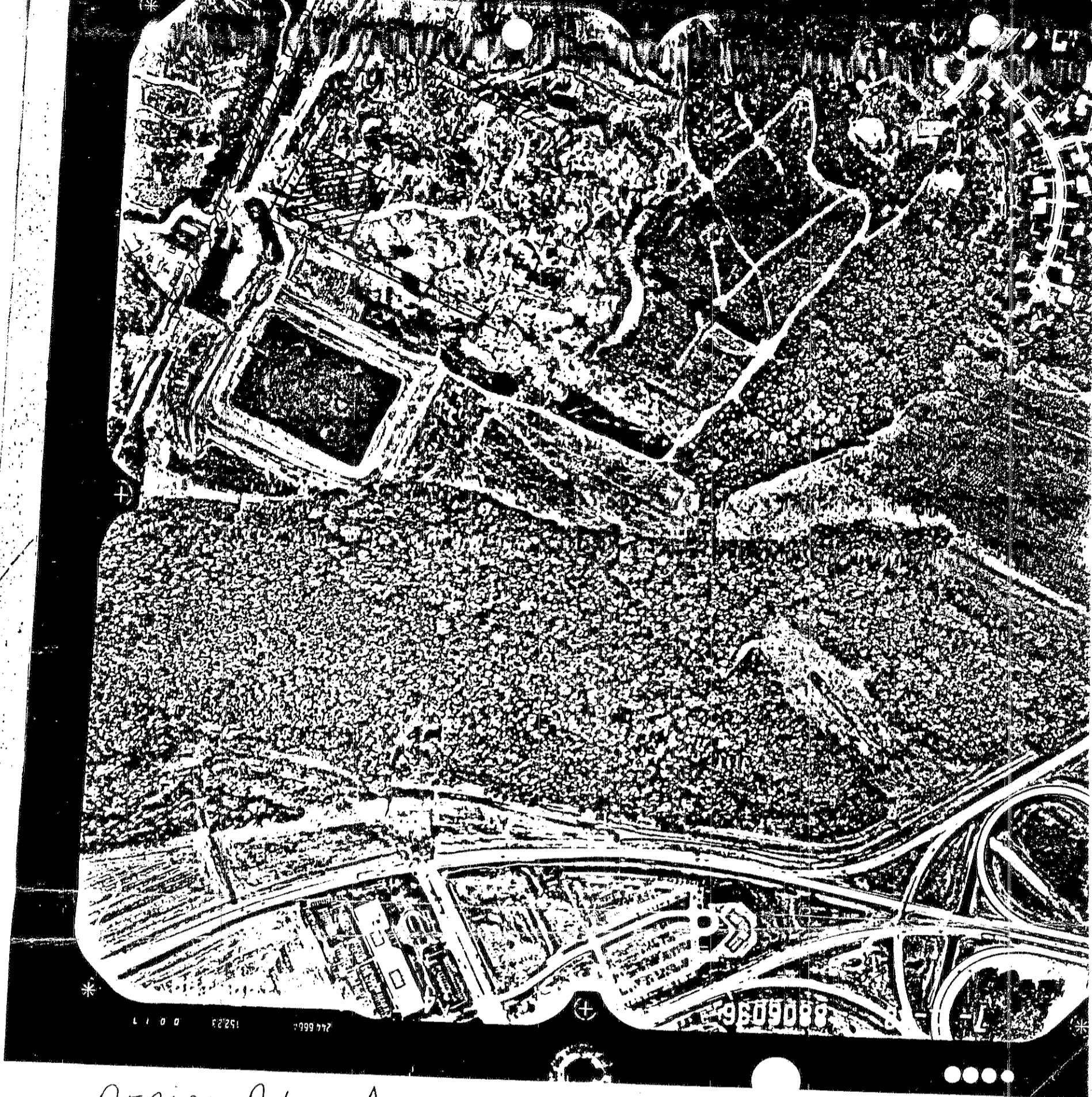
APPROVED BY (DIRECTOR'S REPRESENTATIVE)

DATE APPROVED

6-23-93

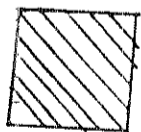
PERMIT NUMBER

46



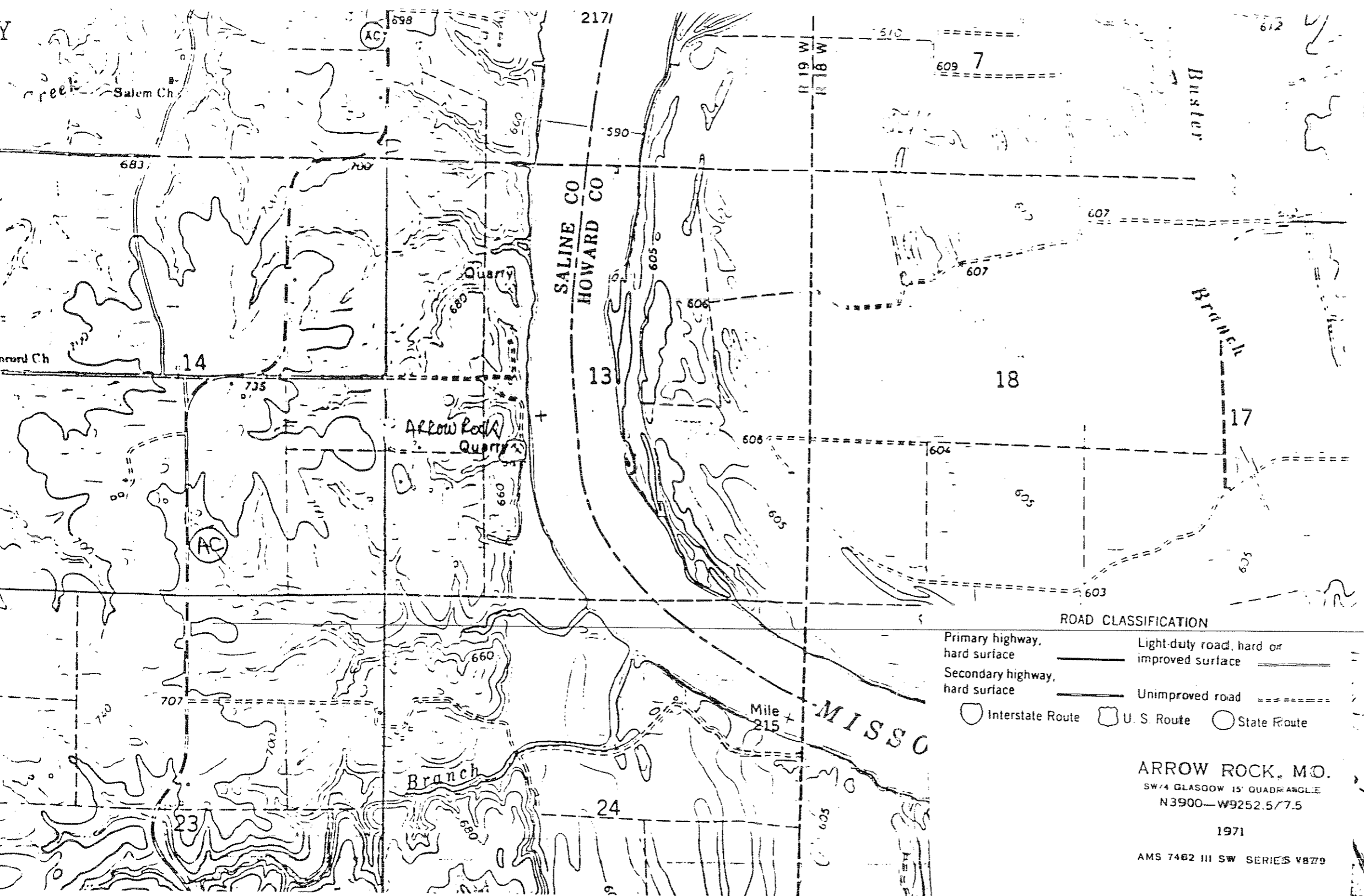
AERIAL PHOTO DATED 7-1-88

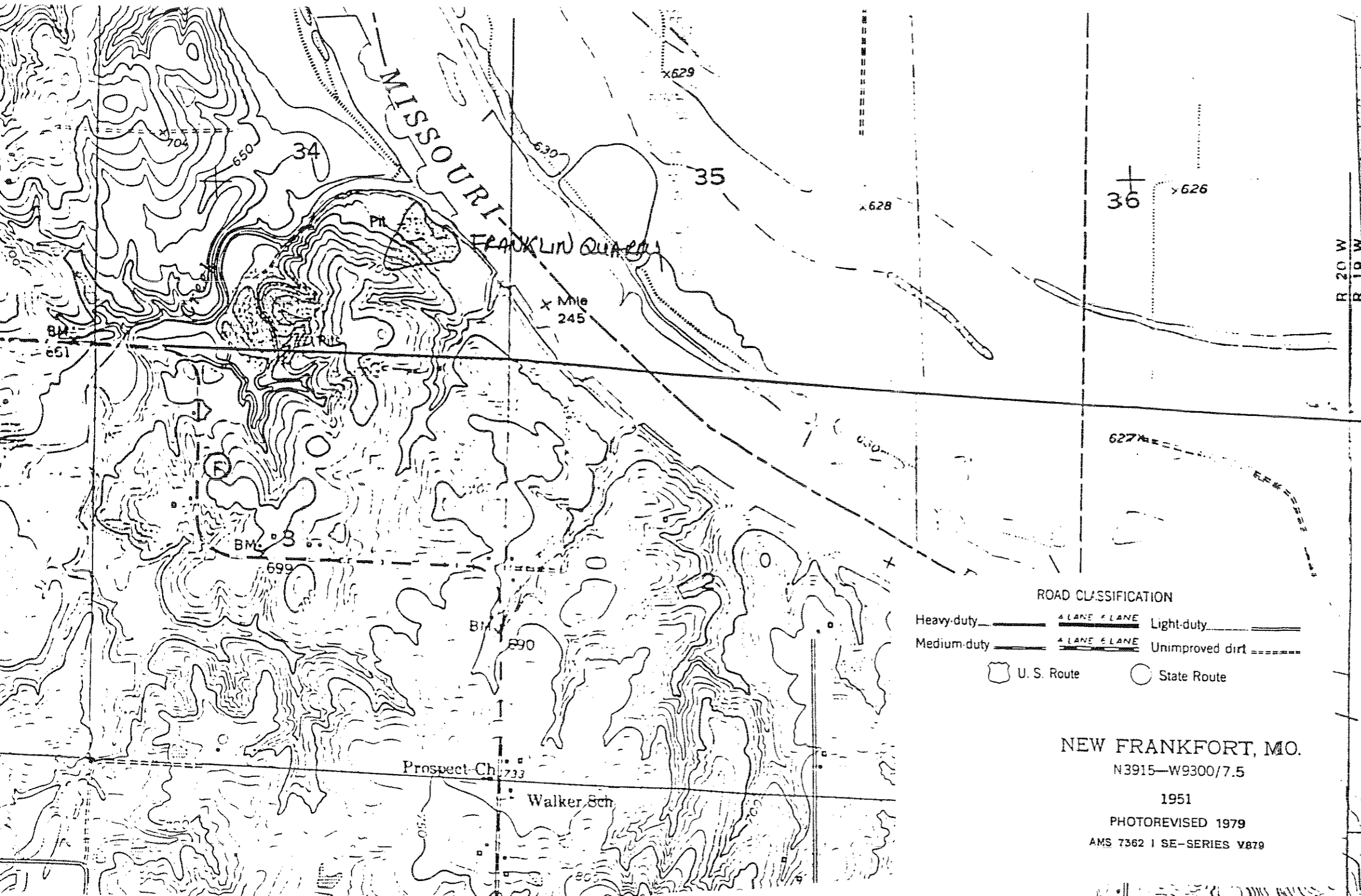
== AREA STRIPPED OF SOIL PRIOR
TO PERMIT APPLICATION



PERMITTED AREA - 2 ACRES







ROAD CLASSIFICATION

Heavy-duty 4 LANE 4 LANE Light-duty
Medium-duty 4 LANE 4 LANE Unimproved dirt
 U. S. Route State Route

NEW FRANKFORT, MO.

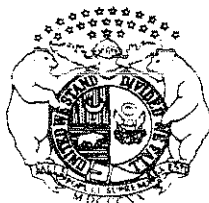
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1951

PHOTOREVISED 1979

AMS 7362 I SE-SERIES V879

MEL CARNAHAN
Governor



DAVID A. SHORR
Director

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY

P.O. Box 176 Jefferson City, MO 65102

DATE: March 29, 1993

COUNTY: St Louis
OW #: OW10412

MAIL TO: Owner Name: West Lake Quarry & Material Co
Contact: W.E. Whitaker
Address: 12976 St Charles Rock Road
City: Bridgeton, MO 63044

RE: Facility Name: West Lake Quarry & Material Co
Address: 13570 St Charles Rock Road
UT #: UT0013618

Our records show that the following registration/insurance fees are unpaid on your account regarding Underground Storage Tanks:

	Fees Already Paid:	Fees Still Due:
Registration -	\$ 120.00	\$ 435.00
Insurance -	\$ 900.00	\$ -0-
TOTAL -	\$ 1020.00	\$ 435.00

PD. 6-16-93
CK# 11528

These fees must be paid to be able to complete your UST Closure with the State of Missouri.

If you have any questions, please feel free to call me at 314/751-7538, or write to my attention at Missouri Department of Natural Resources, Water Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102.

Sincerely,

WATER POLLUTION CONTROL PROGRAM

Janet L. Duncan

Janet L. Duncan
Support Staff
Underground Storage Tank Unit

:jld

6-25-93
JD



Recycled paper

ADR

JUN 21 1993

ST. LOUIS

P.O. Box 182

St. Charles, MO 63302

314-947-9963

DEPARTMENT OF NATURAL RESOURCES
UST DIVISION - JANET DUNCAN
P.O. Box 176
Jefferson City, Mo. 65102

June 16, 1993

RE: UT 0013618

Ms. Duncan,

In accordance with your request of March 29, 1993, the enclosed check is for outstanding fees.

We have submitted a Closure Report & ESP Response to the Lab Services Program for evaluation of existing site conditions.

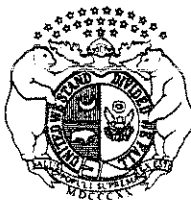
Respectfully, Thank you for your continued support and assistance in providing file reviews, for our clients.

Sincerely,



Patrick Reeves

JOHN ASHCROFT
Governor



RON KUCERA
Acting Director

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY

P.O. Box 176 Jefferson City, MO 65102

CERTIFIED MAIL P 144 644 131
RETURN RECEIPT REQUESTED

File: West Lake Quarry and Material Co. - Permit 46 - Bond Release

December 17, 1992

Mr. W. E. Whitaker
West Lake Quarry and Material Co.
12976 St. Charles Rock Road
St. Louis, Missouri 63114

Dear Mr. Whitaker:

As a result of the telephone conversation with Mr. S. Francis Baldwin on December 9, 1992, we are enclosing two certificates of deposit that were held as reclamation bond for the 30 acre site known as Gray's Point. The bond can be released because Tower Rock Stone Co. has furnished replacement bonding and assumed reclamation responsibility. The certificates are:

5970-051925 for \$5000.00


5970-052720 for \$10000.00

We have received from St. John's Bank and Trust a certificate of deposit number 5970-054426 for \$6000.00 which was being held for safe keeping by them. When we receive replacement bonding and an assumption of reclamation responsibility for 12 acres this CD can be released. The required blank forms have already been mailed to Mr. Baldwin. I would like to thank Mr. Baldwin for his assistance in locating this certificate.

Please call me at (314) 751 4041 if I can be of assistance.

Sincerely,

LAND RECLAMATION COMMISSION


Jerry Wilkinson
Environmental Engineer

enclosures





LAND RECLAMATION COMMISSION
STATE OF MISSOURI
P.O. BOX 176
JEFFERSON CITY, MISSOURI 65102
314-751-4041

NOTICE OF BOND RELEASE

BONDING COMPANY: St John's Bank and Trust Co
8924 St Charles Rock Rd
St Louis MO 63114

BONDED COMPANY: Westlake Quarry and Material Co
12976 St Charles Rock Rd
Bridgeton MO 63044

PERMIT NUMBER: 46

Notice is hereby given that the ^{Director}~~Commission~~ on December 11, 1992 released
the bond listed below:

BOND NO. 5970-051925

DATED January 4, 1988

AMOUNT RELEASED \$5,000

AMOUNT REMAINING 0

Charles A. Stegmann

Director

12-14-92

Date



LAND RECLAMATION COMMISSION
STATE OF MISSOURI
P.O. BOX 176
JEFFERSON CITY, MISSOURI 65102
314-751-4041

NOTICE OF BOND RELEASE

BONDING COMPANY: St John's Bank and Trust Co
8924 St Charles Rock Rd
St Louis MO 63114

BONDED COMPANY: Westlake Quarry and Material Co
1276 St Charles Rock Rd
Bridgeton MO 63044

PERMIT NUMBER: 46

Notice is hereby given that the ^{Director} ~~Commissioner~~ on December 11, 1992 released the bond listed below:

BOND NO. 5970-052720

DATED December 16, 1988

AMOUNT RELEASED \$10,000

AMOUNT REMAINING 0

Charles A. Stutzmann
Director

12-14-92
Date

JOHN ASHCROFT
Governor



RON KUCERA
Acting Director

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102

December 1, 1992

OW10412

WEST LAKE QUARRY & MATERIAL CO
12976 ST CHARLES ROCK ROAD
BRIDGETON, MO 63044

Dear Underground Storage Tank Owner:

The Department of Natural Resources requests that your firm submit documents demonstrating compliance with financial responsibility (FR) requirements for underground storage tanks (USTs).

Please reply within 30 days of the date on this letter. Failure to reply will be considered an indication of noncompliance. Submit a copy of your FR instrument(s) to:

Missouri Department of Natural Resources
ATTN: UST Coordinator
P O Box 176
Jefferson City, MO 65102

State and federal UST regulations require owners of petroleum USTs to demonstrate financial responsibility for the costs of cleanup and other damages caused by a release. The authority for this inquiry is sections 319.100 - 319.129, RSMo and Chapter 11, Division 20, of the Code of State Regulations.

We enclosed a summary of FR requirements and an order form for UST rules for your convenience.

If you feel that you are not subject to FR compliance or have other questions, please contact me or any of the UST Unit Staff at (314) 751-6822. We may need corrections to your UST data.

Sincerely,

WATER POLLUTION CONTROL PROGRAM


Frederick J. Hutson
UST Coordinator

FJH:gma
enclosures - fact sheet/
order form



DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY

TELEPHONE OR CONFERENCE RECORD

File West Lake Permit 4C

Date 12-11-92

314 428 1000

TELEPHONE

CONFERENCE

Incoming ()

Field ()

Outgoing (X)

Office ()

SUBJECT CD 5974 05442L

for 60000

PERSONS INVOLVED

Name

Representing

Jerry Wilkinson

Mo LRP

Bonnie Ehlenbeck

St. John's Bank & Trust Co.

SUMMARY OF CONVERSATION

What is status of above CD.

Ans) it is still outstanding

Find out later it is at the bank.

Mo LRP faxed a letter authorizing bank to
ma. 1 CD to Mo LRP.

ACTION TAKEN

FINAL RESULTS

J. Wilkins

Signature

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY

TELEPHONE OR CONFERENCE RECORD

File Westlake Permt #46 Bonding

Date 12-11-92

TELEPHONE 314-569 7300

CONFERENCE

Incoming ()

Field ()

Outgoing (✓)

Office ()

SUBJECT _____

PERSONS INVOLVED

Name
Gladys Wilson
Lynn Cracraft
Jerry Wilkinson

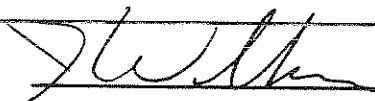
Representing

American Insurance Co. (Greene County)
MoLRP

SUMMARY OF CONVERSATION What is current amount of bonding in force
or 342 4098. Answer - ~~29500~~ \$27000 - this
agrees with MoLRP account.

ACTION TAKEN _____

FINAL RESULTS _____



Signature



BANK & TRUST COMPANY

8924 ST. CHARLES ROCK ROAD • P.O. BOX 15906
ST. LOUIS, MO 63114-0906

PHONE: 314 / 428-1000
FAX: 314 / 426-9317

MEMBER
FDIC



BONNIE R. EHLENBECK
Asst. Vice President
New Accounts Supervisor
314 426-9329

December 11, 1992

Mr. Jerry Wilkinson
Missouri Department of Natural Resources
Division of Environmental Quality
Land Reclamation Program
P. O. Box 176
Jefferson City, MO 65102

Dear Mr. Wilkinson,

Per your instructions, enclosed you will find our Certificate of Deposit #5970-54426 which must be held in the custody of the State of Missouri.

If you have any questions or if I can be of any further assistance, please do not hesitate to contact me.

Yours truly,

Bonnie R. Ehlenbeck

RECEIVED

DEC 16 1992

MISSOURI LAND
RECLAMATION COMMISSION

JOHN ASHCROFT
Governor



RON KUCERA
Acting Director

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102

File: West Lake Quarry and Material Co. - Permit 46

December 11, 1992

Ms. Bonnie Ehlenbeck
St. John's Bank and Trust Co.
8924 St. Charles Rock Road
St. Louis, Missouri 63114

Dear Ms. Ehlenbeck:

Your bank is holding CD # 5970-054426 dated 12-14-89 for \$6000 in safekeeping for West Lake Quarry.

Missouri regulation 10 CSR 40-10.030(2)(B)4 requires reclamation bonds that are secured by CDs to be kept in the custody of the State of Missouri until released by the Land Reclamation Commission.


Please send the CD to:

Missouri Department of Natural Resources
Division of Environmental Quality
Land Reclamation Program
P.O. Box 176
Jefferson City, Missouri 65102

Please call me at (314) 751 4041 if you have any questions.

Sincerely,

LAND RECLAMATION COMMISSION


Jerry Wilkinson
Environmental Engineer

*Faxed
12-11-92
@ 16:30
BW*



STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Mel Carnahan, Governor • David A. Shorr, Director

DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

August 22, 1994

ESP FILE NO.
LU#3874

Mr. B. Whitaker
Westlake Companies
12976 St. Charles Rock Road
Bridgeton, MO 63044

Dear Mr. Whitaker:

RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

The LUST (Leaking Underground Storage Tank) Unit of the Missouri Department of Natural Resources has received and reviewed the ADR/St. Louis Activities Summary dated July 26, 1994, for the above referenced site. Analytical data contained in the report indicate excessive TPH contamination in the vicinity of Monitoring Well #4 .

The reported contaminant concentrations warrant further investigation to include down gradient sampling and, subsequently, a corrective action plan with supporting data.

In addition to the corrective action plan, the LUST Unit will require Westlake Companies to continue to monitor wells 1 & 2 for TPH in addition to well #4 for BTEX and TPH. The LUST Unit will also require the submittal of the summary data pertaining to the purging to Monitoring Well #4. Please submit to this department within thirty days, a proposal to define the extent of contamination.

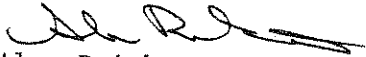
Please submit to the Leaking Underground Storage Tank Unit, within 30 days, a proposal to define the extent of contamination.

Mr. B. Whitaker
August 22, 1994
Page Two

If you have any questions, please do not hesitate to contact Dave Bellamy at our department at 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY



Alan Reinkemeyer
Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

AR:sla

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office
Pat Reeves, ADR/St. Louis, P.O. Box 182, St. Charles, MO 63302

OWNER
ID# DW10412
Name
WEST LAKE QUARRY & MATERIAL CO
776 ST CHARLES ROCK ROAD
County ST LOUIS
City
BRIDGETON
State Zip
MD 63044
Phone 314/739/1122
Type C-P- - - GSA 1

FACILITY
Rec'd Date 04/14/86 ID# UT0013618
Name Same? N Num'sheets 3
WEST LAKE QUARRY & MATERIAL CO
13570 ST CHARLES ROCK ROAD
County ST LOUIS
City
BRIDGETON
State Zip
MD 63044
Num'of Tanks 9



Name (contact) Same? Title Phone 314/739/1122
ROBERT COX SAFETY ENG

Subsequent or amended form?

Name (Cert') Title Signed? Date
W.E. WHITAKER PRES 12/29/92

DNR ID STATUS	OLD YR	CAPACITY	CONSTR'	INT' PRO	LST'USE	CLS	CERT
OWN' ID SUBSTANCE			PIPING	EXT' PRO	LST'AMT	INERT	INST
TNK LD & DATE	PIPE LD & DATE	TK CP DT	PI CP DTE	SPILL?	OVER	%	CAS
1 T	82-	2000	S.	N.	03/26/93	P	
1 G.			G.	P.			0
2 T	81-	10000	S.	N.	03/26/93	P	
2 G.			G.	P.			0
3 C	78-	10000	S.	N.	/ /		
3 D.			B.	P.			0
4 T	72-	10800	S.	N.	03/26/93	P	
4 D.			B.	P.			0
5 T	72-	10000	S.	N.	03/26/93	P	
5 D.			B.	P.			0
6 T	77-	10000	S.	N.	03/26/93	P	
6 D.			B.	P.			0

===== MORE TANKS ON NEXT PAGE =====
A = After 5/8/86 STATUS B = Bare steel C = Current STATUS, concrete, cathodic
D = Diesel E = Empty F = Fiberglass or FRP G = Gas, Gov' or Galv'
H = Haz' Sub I = Used Oil K = Kerosene L = Local N = None
O = Other P = Permanently closed, or Petroleum S = Steel U = Unknown
ATG=auto tk gauge MTG>manual tk gauge VMW=vapor well GWW=GW well
GTT=gauge/tight'test ITT=inv'/tight'test IM=inter'mon FL30=restrict @ 30
S =shutoff @ 95% FL90=restrict @ 90% AL90=alarm @ 90
AL11=alarm @ 1 min AUTO=auto shutoff LLD=line lead detector

(CONT') TANKS FOR WEST LAKE QUARRY & MATERIAL CO
 DW10412 UT0013618 WEST LAKE QUARRY & MATERIAL CO

DNR ID	STATUS	OLD YR	CAPACITY	CONSTR'	INT' PRO	LST'USE	CLS
OWN' ID	SUBSTANCE			PIFING	EXT' PRO	LSI'AMT	INERT
LD & DATE	PIPE LD & DATE	TK CP DT	PI CP DTE	SPILL?	OVER %	CAS	
7 C	60-	10000	S.	N.			
7 D.			B.	P.			

COPY

8 T	72-	1000	S.	N.	05/26/95 P
8 I.			B.	P.	0

9 R	62-	10000	S.	N.	/ /90
9 P.ASPHALT OIL			B.	P.	0

10 R	62-	10000	S.	B.	/ /90
10 P.ASPHALT OIL			B.	P.	0

11 C	68-	10000	S.	N.	/ /
11 D.			B.	P.	0

A = After 5/8/86 STATUS B = Bare steel C = Current STATUS, concrete, cathodic
 D = Diesel E = Empty F = Fiberglass or FRP G = Gas, Gov' or Salv'
 H = Haz' Sub I = Used Oil K = Kerosene L = Local N = None
 (Other P = Permanantly closed, or Petroleum S = Steel U = Unknown
 AIG=auto tk gauge MTG=manual tk gauge VMW=vapor well GWW=GW well
 GTT=gauge/tight'test ITT=inv'/tight'test IM=inter'mon FL30=restrict @ 30
 SO95=shutoff @ 95% FL90=restrict @ 90% AL90=alarm @ 90
 ALM1=alarm @ 1 min AUTO=auto shutoff LLD=line lead detector

Closing firm and contact

PATRICK REEVES

DR ST. LOUIS

DALE AVE

RICHMOND HEIGHTS

Phn 314-645-4366

MO 63117

Comment REMOVED FROM SERVICE 1980

Cls # UC01255 Notice 05/15/90 Compl' 05/17/90

Tanks 9,10

Letter dte 05/17/90 to ESP

Report dte 05/15/90 tank

LSP#

soil
sludge



total 2

BTX
100 yds
haz'

Closing firm and contact

AT REEVES

DR

BOX 182

ST CHARLES

Phn 314-947-9963

MO 63302

Comment 1-2000 GAL GAS, 1-10,000 GAL GAS, 1-10800 GAL DIESEL, 2-10,000 GAL DIESEL,
1-1000 GAL WASTE OIL

Cls # UC04504 Notice 03/26/93 Compl'

Tanks 1,2,4,5,6,8

Letter dte 03/30/93 to ESP

Report dte

LSP#

tank

soil

sludge

map

samples

TPH

total 6

BTX
100 yds
haz'



MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER POLLUTION CONTROL PROGRAM
UST FLOOD IMPACT ASSESSMENT FORM

County St. Louis
UT# 0013618
LU# 03874

I. Facility Information

Name: West Lake Quarry & Material Co
Address: 13570 St. Charles Rock Road
City: Raytown Zip: 63044

Present condition of facility:

☒ Operating
☐ Closed
☐ Flooded

Contact Person: Bill Whitaker
Contact Phone: 314 / 739-1122

Number of USTs: 10

removed 9

II. Assessment GPS Coordinates:

one purchased by Laidlaw

Extent of flooding:

☒ None
☐ Tanks submerged
☐ Dispensers submerged
☐ Vents submerged

Status of USTs:

☐ Unknown ☐ Empty
☐ Full of product
☐ Partly filled w/ product
☐ Partly filled w/ water

(out of service) but in ground

Check if the following conditions are present:

☐ Pavement disturbed/broken up
☐ Water in USTs
☐ Leak detection not operating
☐ Vent lines damaged
☐ Free product in monitoring wells

☐ USTs floated
☐ Dispensers damaged
☐ Piping and/or fittings damaged
☐ Other visible damage (specify)
☐ Free product on site (specify)

Notes: had 10 tanks, but lost one removed in December of 1993.

III. Evaluation

☒ No visible damage caused by flood
☒ No evidence of a release
☐ Non-compliance w/ UST rules (explain)
☐ Suspected release (explain)
☐ Confirmed release (explain)

Explanation:

IV. Recommended Action

Guidance documents provided:
☐ Closure guide
☐ Corrective action plan
☐ Site characterization
☐ Leak detection methods
☐ Controlling cleanup costs

Instructions:

Followup required? Y ☒ N

Copy of form provided? Y ☒ N

Inspected by Tim Biers / Becky MacDonald

Date 5/12/94

ATTACHMENT 2

IMPACT OF FLOOD AND RAIN QUESTIONNAIRE
MISSOURI LEAKING UNDERGROUND STORAGE TANK PROGRAM

FACILITY NAME: West Lake Quamy & Material Co.

LOCATION: 13570 S. Charles Rock Rd.
Bridgeton, MO 63044

MO UT# 0013618 MO LU# 03874

DATE: 5/12/94

1. Is this facility located within approximately 1/2 mile of a river, creek or stream? YES or NO? If YES, what is the name if known? _____

2. Are there any visual signs that the facility was affected by flood waters? YES or NO? If YES, describe: _____

3. Was the facility damaged by the flood water or rain? YES, NO, or Unknown? If YES, generally describe the damage, if unknown, explain: _____

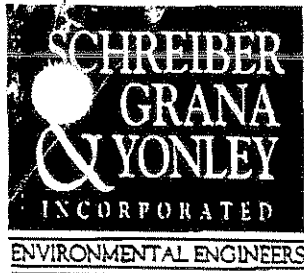
IF THE ANSWER TO QUESTION #3 IS NO, STOP HERE.

4. Were there any release of product or waste oil as a result of the flooding? YES or NO? If YES, describe: _____

5. If the answer to question 4 is YES, has remedial activity occurred to address the releases? YES or NO? If YES, describe: _____

6. Did water enter any of the tanks because of flooding or high groundwater?

7. Were there any circumstances such as design criteria, filling tanks, or other actions that the facility took that were useful in preventing potential releases? YES or NO? For the purpose of this question, we are looking for the "lessons learned" that may be useful in future guidance, etc. If YES, describe: _____



271 Wolfner Drive • Saint Louis, Missouri 63026
314/349-8399 • Fax 314/349-8384

FACSIMILE TRANSMITTAL COVER SHEET

TO: DAVE BENAMY

FROM: ED SNEPAED

DATE: Nov. 10, 1994

No. of pages (including cover sheet) 3 4

From Fax No.: (314) 349-8384

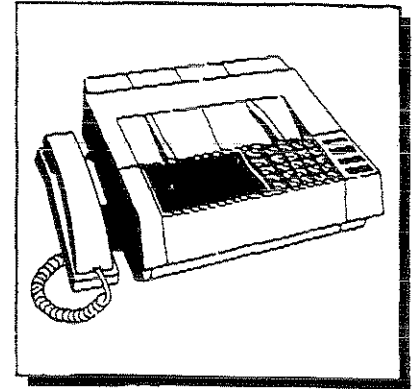
To Fax No.: 526-3850

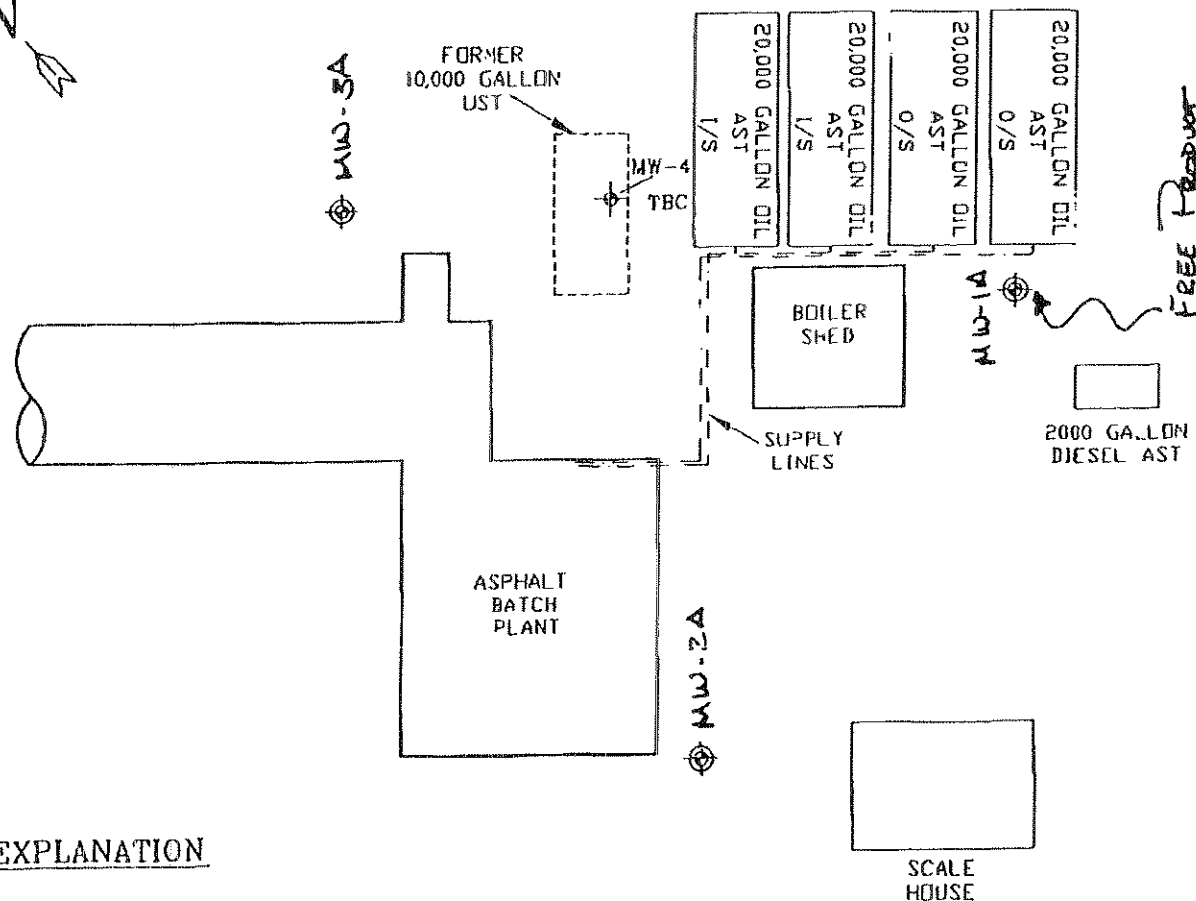
MESSAGE: ENCLOSED PLEASE FIND FIGURE 1 & FIGURE 1
WITH FREE PRODUCT WELL INDICATED. THE PLAYERS
ARE ALSO LISTED.

THANKS



Ed.

IF YOU DO NOT RECEIVE ALL PAGES TRANSMITTED,
PLEASE CALL (314) 349-8399





EXPLANATION

-  PROPOSED MONITORING WELL
-  MONITORING WELL
- AST ABOVEGROUND STORAGE TANK
- I/S IN SERVICE
- O/S OUT OF SERVICE
- TBC TO BE CLOSED
- UST UNDERGROUND STORAGE TANK

SITE and PROPOSED MONITORING WELL LOCATIONS MAP

MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI

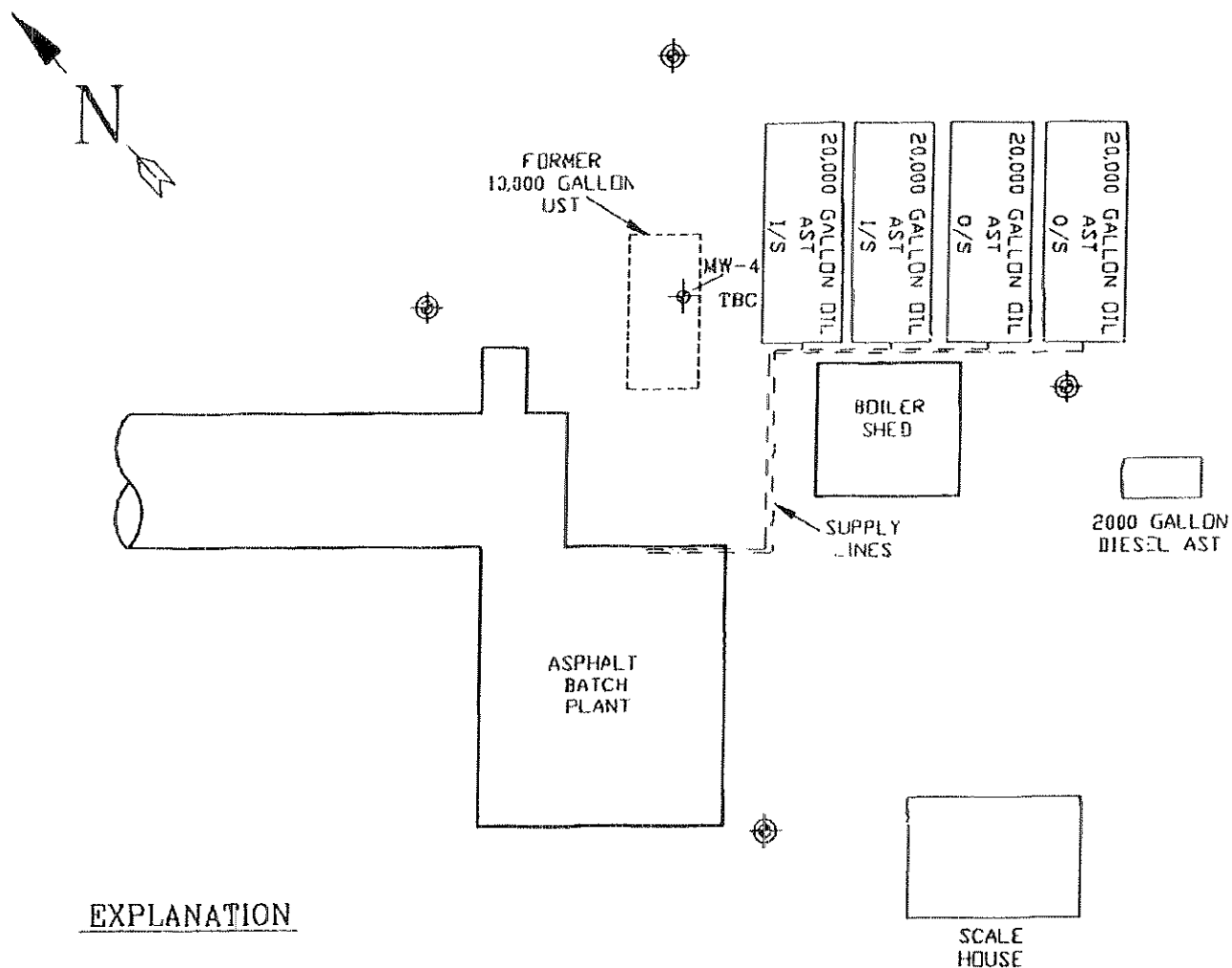
FIGURE 1

SCALE:
1"=20'

DWG.#
MI101-1

SCHREIBER
& GRANA
YONLEY
INCORPORATED

ENVIRONMENTAL ENGINEERS



EXPLANATION

- ⊕ PROPOSED MONITORING WELL
- ⊕ MONITORING WELL
- AST ABOVEGROUND STORAGE TANK
- I/S IN SERVICE
- O/S OUT OF SERVICE
- TBC TO BE CLOSED
- UST UNDERGROUND STORAGE TANK

SITE and PROPOSED MONITORING WELL LOCATIONS MAP

MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI

FIGURE 1

SCALE:
1" = 20'

DWG. #
MH01-1

SCHREIBER
& GRANA
YONLEY
INCORPORATED

ENVIRONMENTAL ENGINEERS

PROPERTY OWNER : WESTLAKE COMPANIES
12976 ST. CHARLES ROCK ROAD
BRIDGETON, Mo. 63044
ATTN: MR. BELL WHITAKER.

#2 (operator)
PLANT OWNER : MARION INDUSTRIES, INC.
(LEASES PROPERTY) 150 WELDON PARKWAY
MARYLAND HEIGHTS, Mo. 63043
ATTN: MR. VENCE JONES

CONSULTANT : SCHWEIBER, GRINA & YONLEY, INC.
(WORKS FOR MARION) 271 WOLFNER DR.
ST. LOUIS, Mo. 63026
ATTN. MR. ED SHEPARD.

COULD YOU PLEASE SEND A FOLLOW-UP LETTER
APPROVING THE PLAN FOR OUR ORIGINAL CONVERSATION

THANKS,

ED SHEPARD.

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Mei Camaban, Governor • David A. Shorr, Director

DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

November 4, 1994

ESP FILE NO.
LU#3874

Mr. B. Whitaker
Westlake Companies
12976 St. Charles Rock Road
Bridgeton, MO 63044

Dear Mr. Whitaker:

RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

The Leaking Underground Storage Tank (LUST) Unit of the Missouri Department of Natural Resources (MDNR) has received and reviewed the Schreiber, Grana & Yonley, Inc. Investigative Workplan dated October 12, 1994, on the above referenced site. The LUST Unit will not approve the proposed plan without the following information:

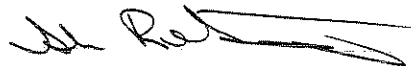
1. Figure #1 site map; and,
2. Pump and purge product recovery records as previously requested in MDNR's letter of August 22, 1994.

Upon receipt of the requested items, MDNR will determine whether or not MW-4 meets the criteria for closure. Therefore, please submit the requested information within 30 days of receipt of this letter.

If you have any questions, please do not hesitate to contact Dave Bellamy at the Leaking Underground Storage Tank Unit at 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY



Alan Reinkemeyer
Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

AR:jlh

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office
Schreiber, Grana, and Yonley, Inc., 271 Wolfner Drive, St. Louis, MO
63026
Pat Reeves, ADR/St. Louis, P.O. Box 182, St. Charles, MO 63302

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Mel Carnahan, Governor • David A. Shorr, Director

DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

November 22, 1994

ESP FILE NO.
LU#3874

Mr. B. Whitaker
Westlake Companies
12976 St. Charles Rock Road
Bridgeton, MO 63044

Dear Mr. Whitaker:

RE: Westland, 13570 St. Charles Rock Road, Bridgeton, MO

The Leaking Underground Storage Tank (LUST) Unit of the Missouri Department of Natural Resources (MDNR) has received and reviewed the November 10, 1994, facsimile on the above referenced site. Based on the additional information, the LUST Unit approves the previously submitted "Subsurface Workplan" dated October 12, 1994.

The reported free product/contamination warrants further investigation to delineate the horizontal and vertical extent of the plume. This should include the determination as to whether or not the tank pit is working as a direct conduit to groundwater.

Please submit to this department, within 30 days, an addendum to address these issues in the work plan.

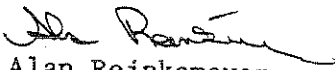
Per 10CSR20-10.064 and paragraphs 3.2 and 5.2 of MDNR's Corrective Action Guidance Document, the LUST Unit requires the initial free product recovery report be submitted within 45 days of confirming the release. The initial recovery report should be followed by monthly written reports to this unit providing information on free product recovery activities and any changes made to enhance the rate of recovery.

Mr. B. Whitaker
November 22, 1994
Page Two

If you have any questions, please do not hesitate to contact Dave Bellamy at the Leaking Underground Storage Tank Unit at 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY



Alan Reinkemeyer
Supervisor

Leaking Underground Storage Tank Unit
Environmental Services Program

AR:jlh

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office
Mr. Ed Shepard, Schreiber, Grana, & Yonley, Inc., 271 Wolfner Drive,
St. Louis, MO 63026
Mr. Vince Jones, Marion Industries, Inc., 150 Weldon Parkway,
Maryland Heights, MO 63043

ADR

JAN 4 1995

JAN 10 1995

ST. LOUIS

P.O. Box 182

St. Charles, MO 63302

314 947-9963

Department of Natural Resources
P.O. Box 176
Jefferson City, Mo. 65102

Attn: LU Division
re: LU 3874 Purge & Recovery Data Requested

December 9, 1994

Mr. Bellamy,

In accordance with your request of August 22, 1994, the attached records reflect the details regarding "pump and purge" activities associated with Well # 4. As disclosed previously, the well did not provide adequate recharge to support the implementation of direct "pump and treat" applications, as a viable remedial effort.

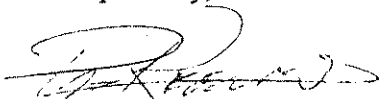
The information attached reflects the actual field record without adjustment or any compensation. The decimal conversions and riser adjustments compiled and presented in previously submitted data may be compared with this field data. However, a discrepancy in December will appear due to the riser reduction (18 inches) which occurred in February.

During the months of January through May, the upper well contents were bailed and stored on-site for future disposal. As provided in our report of July 28, 1994, of the 80 gallons collectively removed from the well, less than 5 gallons was recognized as recovered product.

During July 1994, a review of available information and a site inspection were conducted by representatives of Schreiber, Grana & Yonley, Inc., to provide an independent opinion with respect to investigation and remedial concerns. Subsequently, our company received directives to discontinue activities or efforts associated with Well #4.

Respectively, future communications or inquiry regarding this well should be addressed, based on the date of activity and respective participant. If you should have any further questions regarding activities relative to Well #4, please contact me.

Respectfully,



Patrick Reeves

ADR**ST. LOUIS**

P.O. Box 182

St. Charles, MO 63302

314-947-9963

LU3874

MONITOR WELL #4

PURGE & RECOVERY DATA

12-17-93	Confirmation of well measurements.		
	Riser top to well bottom	35'4"	
	Riser above grade	5'0"	
	Fluid level below riser top	29'10.5"	
	Fluid level below grade	24'10.5"	
	Removed 8 bails (2 gals)	32'1.5"	
	Recharge (10 min.)	31'8.5"	1.62 gph.
	Initial bails were product. transpiring to "milky" water.		
12-18-93	Start Measurement	29'8"	
	Removed 10 bails	32'6"	
	Recharge (10 min.)	32'2"	1.26 gph
	Recharge (10 min.)	31'10"	
	Initial 4 bails product. balance clear water.		
12-20-93	Start measurement	29'11"	
	12 bails out. 50% water	33'0"	
	Recharge (10 min.)	32'6"	
	"	32'1"	1.47 gph
	"	31'10"	
	"	31'6"	
	10 bails out. 90% water	34'6"	
	Recharge (10 min.)	33'10"	
	"	33'6"	1.74 gph
	"	33'2"	
	4 bails out. 98% water	34'6"	
	Recharge (10 min.)	34'3"	
	"	34'0"	1.08 gph
	"	33'8"	

LU 3874- Well #4, Purge & Recovery Data

12-21-93	Start measurement	30'1"	
	1st bail sample, 16" of product		
	Diminished to 1 2" by = 6 bail		
	Total of 14 bails out (3.5 gls.)	34'3"	
	Recharge (10 min.)	33'9"	
	"	33'5"	
	"	33'1"	
	"	32'9"	
	"	32'5"	1.41 gph
	"	<u>32'1"</u>	
12-22-93	Start measurement	30'2"	
	1st bail sample, 6" product		
	Diminished to 1 2", by = 4		
	Total of 12 bails (3 gls.)	33'5"	
	Recharge (10 min.)	32'10"	
	"	32'6"	1.30 gph
	"	32'2"	
	"	<u>31'11"</u>	
12-27-93	Start measurement	30'5"	
	1st Bail sample, 6" product		
	Diminished to 1 2 by =4		
	Total bails 12 (3 gls.)	34"	
	Recharge (10 min.)	33'8"	1.09 gph.
	"	33'5"	
	"	<u>33'2"</u>	

LU 3874- WELL #4, Purge & Recovery Data

Implemented to provide current information and a confirmation of prior data.

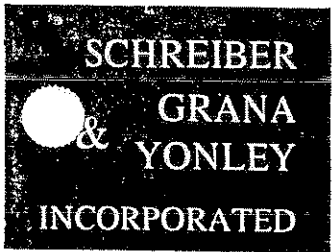
5-04-94	Start measurement	28'5"	
	1st bail, 2" product layer		
	12 bails removed (3.5 gls.)	33'1"	
	Recharge (10 min.)	32'3"	3.1 gph.
	"	<u>31'6"</u>	
5-05-94	Start measurement	27'8"	
	1" product layer on 1st bail		
	10 bails out (2.5 gls.)	31'8"	2.45 gph.
	Recharge (20 min.)	<u>30'5"</u>	
	8 bails out (2 gls.)	32'10"	
	Recharge (10 min.)	32'1"	2.8 gph.
	"	31'4"	
	"	<u>30'8"</u>	
5-08-94	Start Measurement	27'10"	
	3" product layer on 1st bail		
	13 bails out (3.25 gls.)	32'8"	1.76 gph.
	Recharge (1.5 hours)	28'7"	
5-20-94	Start measurement	28'0"	
	10 bails out	30'10"	
	10 bails out	31'10"	
	Recharge (30 min.)	30'1"	1.68 gph.
	"	29'3"	

LU 3874- WELL #4. Purge & Recovery Data

5/25/94	Start measurement	28'2"	
	3" product layer on 1st bail		
	16 bails out (4 gls.)	33'2"	
	Recharge (15 min.)	32'2"	
	"	31'6"	
	"	30'8"	2.07 gph
	"	<u>30'0"</u>	
6/06/94	Start measurement	28'8"	
	1st bail, 4" of product		
	20 bails out (5 gls.)	33'4"	
	Recharge (20 min.)	32'6"	
	"	31'8"	1.27 gph.
	"	31'4"	
	"	30'7"	
	"	<u>30'1"</u>	
6/10/94	Start measurement	29'0"	
	1st bail 6" of product		
	15 bails out (3.75 gls)	32'4"	
	Recharge (15 min)	31'7"	
	"	31'1"	
	"	30'7"	1.22 gph
	"	30'3"	
	"	<u>30'0"</u>	

LU 3874 WELL #4 Purge and Recovery Data

6/17/94	Start measurement	29'2"	
	1st bail. 4" product		
	20 bails out (5 gls.)	33'4"	
	Recharge (15 min.)	33'1"	0.86 gph.
	"	32'8"	
6/26/94	Start measurement	29'6"	
	1st bail. 4" product		
	8 bails out (2 gls.)	32'5"	
	Recharge (30 min.)	31'9"	0.87 gph.



LETTER OF TRANSMITTAL

TO: DAVE BELLAMY
MDNR
LEAKING UST UNIT
ENVIRONMENTAL SERVICES PROGRAM
P.O. Box 176
JEFFERSON CITY, Mo. 65102-0176

DATE:	JOB NO.
ATTENTION:	
RE:	DECEIVER
OCT 28 1994	

WE ARE SENDING YOU the following items: ☒ Attached ☐ Under separate cover via _____

- ☐ Shop Drawing ☐ Prints ☐ Samples ☐ Specifications
☐ Copy of Letter ☐ Change Order ☒ FINALIZED WORKPLAN AND SCHEDULE

COPIES	DATE	NO.	DESCRIPTION
1			WORKPLAN
1			SCHEDULE

THESE ARE TRANSMITTED as checked below:

- ☐ For Approval ☐ Approved as Submitted ☐ Resubmit ____ Copies for Approval
☐ For Your Use ☐ Approved as Noted ☐ Submit ____ Copies for Distribution
☒ As requested ☐ Returned for Corrections ☐ Return ____ Corrected Prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19____ ☐ PRINTS RETURNED AFTER LOAN TO US

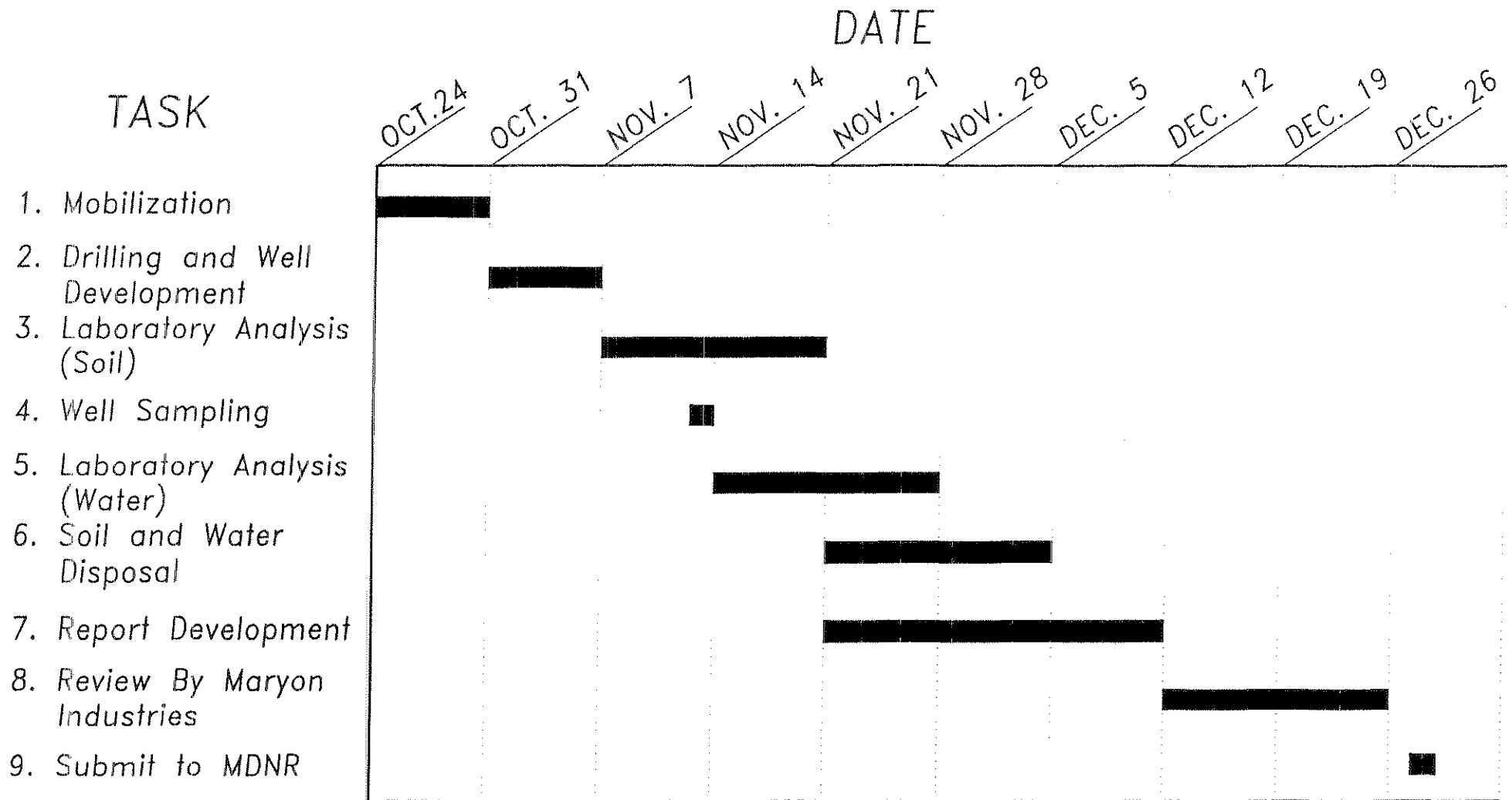
REMARKS: LU# 3874 WEN #4 UST#7 MDNR No. 11

COPY TO:

SIGNED: E.S.O.

(314) 349-8399

ATTACHMENT A WORKPLAN IMPLEMENTATION SCHEDULE



**SUBSURFACE ENVIRONMENTAL SITE
INVESTIGATION WORKPLAN**

**MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI**

LU #3874

October 12, 1994

PREPARED FOR:

**MR. VINCENT M. JONES
PRESIDENT
MARYON INDUSTRIES, INC.
150 WELDON PARKWAY
ST. LOUIS, MISSOURI 63043**

PREPARED BY:

**SCHREIBER, GRANA & YONLEY, INC.
271 WOLFNER DRIVE
ST. LOUIS, MISSOURI 63026**

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APPENDIX B WELL COMPLETION FORM EXAMPLE
APPENDIX C MONITORING REPORT EXAMPLE
APPENDIX D GROUNDWATER MONITORING FIELD FORM EXAMPLE

1.0 INTRODUCTION

At the request of Maryon Industries, Inc., Schreiber, Grana & Yonley, Inc. has developed a Subsurface Environmental Site Investigation Workplan for the Maryon Industries, Inc. facility located at the Westlake Quarry & Material Company facility in Bridgeton, Missouri. This investigation will focus on the location of the former 10,000 gallon diesel underground storage tank. The facility is currently an operating asphaltic concrete manufacturing plant. The facilities include the asphalt batch plant, four (4) 20,000-gallon oil above ground storage tanks, one (1) 2,000-gallon diesel above ground storage tank, two (2) small storage buildings, and the scale house.

The investigation will consist of the following:

- Drill four (4) soil borings, each extending to an approximate maximum depth of 35 feet below ground surface (bgs);
- Install four (4) on-site shallow groundwater monitoring wells, completed to an approximate maximum depth of 35 feet bgs;
- Field screening of soil samples;
- Laboratory analysis of soil samples;
- Collection of groundwater samples;
- Laboratory analysis of groundwater samples;
- Data evaluation and reduction; and,
- Report preparation for client and regulatory review.

The purpose of this investigation is to:

- Evaluate the shallow subsurface lithology present beneath the site;
- Identify the existence, magnitude and extent of benzene, toluene, ethylbenzene and xylenes (BTEX) and total petroleum hydrocarbons (TPH) constituents in excess of Missouri Department of Natural Resources (MDNR) cleanup objectives at the subject property;
- Identify potential source(s) of BTEX and TPH constituents, if any; and
- Identify the need and/or scope of additional work to evaluate BTEX and TPH constituents.

In addition to the investigatory activities performed on-site, Schreiber, Grana & Yonley, Inc. will also properly close the existing monitoring well at the asphalt facility.

Therefore, the following scope of work will be performed at the site.

2.0 METHODS OF INVESTIGATION

This section describes the procedures and methods of soil boring drilling, soil screening, groundwater monitoring well installation, survey and development, and soil and groundwater sampling and analysis.

2.1 Soil Boring Drilling/Soil Screening/Sampling

Soil boring drilling will be conducted by a subcontract driller, under the direction of a Schreiber, Grana & Yonley, Inc. representative. The approximate locations of the soil borings are presented in Figure 1. The borings will be advanced utilizing hollow stem augers and a truck-mounted drill rig. The borings will be advanced/sampled to approximately 35 feet bgs.

A two-inch diameter split spoon sampler will be advanced ahead of the hollow stem auger to collect a minimally disturbed soil sample. Soil samples from each of the borings will be collected continuously. This method of sample collection allows a review of subsurface lithology and vertical correlation of soil lithology below the site.

After retrieval of the split spoon sampler from the boring, the sampler will be opened and the soil will be screened immediately with a Photovac MicroTip[®] photoionization detector (PID) to monitor the total concentration of ionizable gases and vapors. The PID will be calibrated prior to use at the site, daily thereafter, using isobutylene at a concentration of 100 parts per million (ppm), which provides a mid-range balance for expected readings.

Boring logs will be prepared in the field as the sampler is retrieved and opened. Properties such as soil composition, structure, voids, layering, lenses, odor, staining, mottling, etc. will be noted, as appropriate, on the boring logs. Classification of the soils according to the Unified Soils Classification System will be included on the logs, an example of which is contained in Appendix A.

As each section of soil core is examined and screened with the PID, a representative section, a stratigraphically significant section, or the section with the highest PID reading will be split, and each half will be placed into a Zip-Loc[®] bag. One (1) sample will be placed into a chilled cooler, and the other sample will be placed in a warm environment and allowed to equilibrate for approximately five minutes prior to screening with the PID. The PID probe will be inserted into the Zip-Loc[®] bag and a reading will be obtained. Two (2) samples per borehole, one (1) from the section exhibiting the highest PID reading and one (1) from at or near the soil/water interface will be collected. These samples will be transferred into appropriate laboratory-prepared sampling containers and placed on ice for subsequent shipment to the subcontract laboratory for analysis. A chain-of-custody form will be generated and included with the samples. Soil samples will be analyzed for BTEX according to EPA Method 8020, and TPH according to EPA Method 418.1.

The drill rig augers, tools and associated equipment will be steam-cleaned prior to the start of drilling at each borehole location in order to minimize cross-contamination between individual boreholes. Downhole soil sampling devices will be washed in an Alconox/water solution and rinsed with tap water between each sampling event in order to minimize cross-contamination between individual samples. Small sampling tools

Figure 1

used to retrieve individual soil samples from the retrieved soil core will be washed in an Alconox/water solution and rinsed with de-ionized water. Additionally, a new pair of disposable latex gloves will be worn by the person sampling to further limit cross-contamination. Soil cuttings and decontamination water will be containerized and stored on-site in labeled, 55-gallon, DOT-approved steel drums, pending proper disposal.

2.2 Groundwater Monitoring Well Installation Procedures

Four (4) groundwater monitoring wells will be installed to further evaluate the horizontal and vertical extent of BTEX and TPH constituents and to assess the groundwater quality. The monitoring wells will be installed by the subcontract driller, under the observation of a Schreiber, Grana & Yonley, Inc. representative, into the soil borings which were drilled as part of the soil investigation. The approximate locations of the monitoring wells are presented on Figure 1. The four (4) monitoring wells will be installed to an approximate depth of 35 feet bgs.

Monitoring wells will be constructed of two-inch, screw-coupled, schedule 40 polyvinyl chloride (PVC) casing, with 10 feet of 0.010-inch factory slotted PVC well screen. An 8-inch threaded end cap will be used at the bottom of the screen to provide for sediment storage. A new pair of disposable latex gloves will be worn by the subcontract driller personnel in order to minimize the possibility of contaminating the new screen and riser.

A washed, silica sand filter pack will be used over the entire screened section and to at least one (1) foot above the top of the screen. A minimum of three (3) feet of bentonite pellets will then be placed into the borehole annulus to provide an annular seal above the filter pack. The pellets will be hydrated in-place with fresh (city) water. A weighted tape will be utilized for control purposes to insure proper thickness and depth of the sand pack and bentonite seal.

A cement/bentonite grout mix will be utilized to backfill the remaining annulus and to provide anchoring for a flush-grade protective manhole cover or a pedestal mount protective cover for each of the monitoring wells. The covers prevent surface water from infiltrating into the borehole annulus/well while also allowing for well protection. The flush-grade protective manhole cover will be utilized in high traffic areas to allow for normal traffic flow. A locked compression cap will be placed over the top of the PVC riser on each of the monitoring wells.

Appendix B contains examples of monitoring well completion forms.

2.3 Groundwater Monitoring Well Survey Procedures

A site map, identification of potential subsurface migration routes and potential receptors, and a well casing elevation survey will be completed by a Schreiber, Grana & Yonley, Inc. representative. The survey will be conducted to provide vertical control for the

monitoring well casings. Elevations for the top of the PVC casing will be obtained via a level, a tripod and a measuring rod utilizing conventional leveling techniques. The elevations will be surveyed to an arbitrary datum of +100.0 feet and an accuracy of 0.01 feet to allow calculation of relative fluid level elevations in the wells.

2.4 Groundwater Monitoring Well Development Procedures

The four (4) monitoring wells will be developed by Schreiber Grana & Yonley, Inc. personnel. The development will be conducted to remove suspended solids resulting from installation of the monitoring wells. The development will be accomplished by using dedicated, disposable hand bailers. By removing water stored in the well casing and the adjacent filter pack, fresh groundwater entering the monitoring well breaks down any mud cake which may form on the annulus wall, and washes these materials into the monitoring well for removal. A much cleaner annulus and sand/gravel pack remains for proper performance of the monitoring well and more representative groundwater samples.

Each of the four (4) monitoring wells will be developed by removing a minimum of four (4) casing volumes per development event. Development water generated during the development will be contained and stored on-site in labeled, 55-gallon, DOT-approved steel drums, pending proper disposal.

2.5 Groundwater Monitoring Well Fluid Level Measurements

The fluid levels of the monitoring wells will be gauged by a Schreiber, Grana & Yonley, Inc. representative. This will be done to determine the presence of liquid-phase hydrocarbons and/or groundwater in the wells. The measurements of groundwater depths will be taken from the top of the well casing with an electronic water level indicator probe which measures fluid levels to an accuracy of 0.01 feet.

The presence of liquid-phase hydrocarbons will be determined by lowering a dedicated, disposable bailer into each well and visually checking the bailed fluid for such.

These measurements will then be referenced to the top of the casing survey data for each monitoring well and utilized for determination of the groundwater surface elevation and groundwater flow direction and gradient. In addition, the measurement data will be utilized to calculate the water column within each monitoring well and the required volume of water to purge from each monitoring well prior to sampling (discussed further in Section 2.6). The measured groundwater depths will be included on the monitoring report, an example of which is contained in Appendix C.

2.6 Groundwater Sampling Procedures

Groundwater samples will be collected utilizing dedicated, disposable, polyethylene bailers. A new bailer will be utilized at each monitoring well to preclude the need for bailer washing/decontamination, and to prevent cross-contamination between monitoring wells sampled. New bailer twine will be utilized for each bailer.

An initial amount of four (4) well casing volumes of water will be removed from each monitoring well in order to purge the well. This water will be contained and stored on-site in labeled, 55-gallon, DOT-approved steel drums pending proper disposal. Subsequent bailers of water will be used to fill the sample containers. The sample containers were cooled to approximately 4° Celsius and shipped next day delivery for analysis to the subcontract laboratory. Samples will be labeled with the collection date, sample I.D., type of preservative utilized, and person collecting the sample. A chain-of-custody form will be generated and included with the samples for transport to the laboratory. Groundwater samples will be analyzed for BTEX according to EPA Method 8020, and TPH according to EPA Method 418.1.

Sample containers used for this project (soil and groundwater) will be laboratory-supplied, pre-cleaned, EPA-approved containers which contain no preservatives. An example of the Groundwater Monitoring Field Form, which contains well development and groundwater sampling details, is contained in Appendix D.

3.0 EXISTING MONITORING WELL CLOSURE PROCEDURES

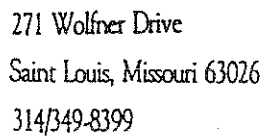
The existing 4-inch PVC monitoring well located at the site will be closed in accordance with Missouri Well Construction Rules dated December 1993.

First, the monitoring well will be overdrilled, utilizing hollow stem augers and a truck mounted drill rig to remove the well casing, screen and sand pack. Next, the borehole will be plugged with a cement/bentonite grout delivered via a tremie pipe through the center of the hollow stem augers as the augers are withdrawn from the borehole. This method of closure ensures that a good seal is achieved so as to minimize the vertical migration of contaminants along the borehole.

4.0 REPORT

Upon completion of field activities and receipt of analytical results, Schreiber, Grana & Yonley, Inc. will develop a summary report. The report will describe the existing environmental conditions relating to BTEX and TPH constituents and/or other appropriate information pertaining to this site, and will discuss the regional, local and site geology/hydrogeology. The report will also summarize field activities, present field and analytical data, and present conclusions of the investigation.

APPENDIX A
BORING LOG EXAMPLE

[illegible]

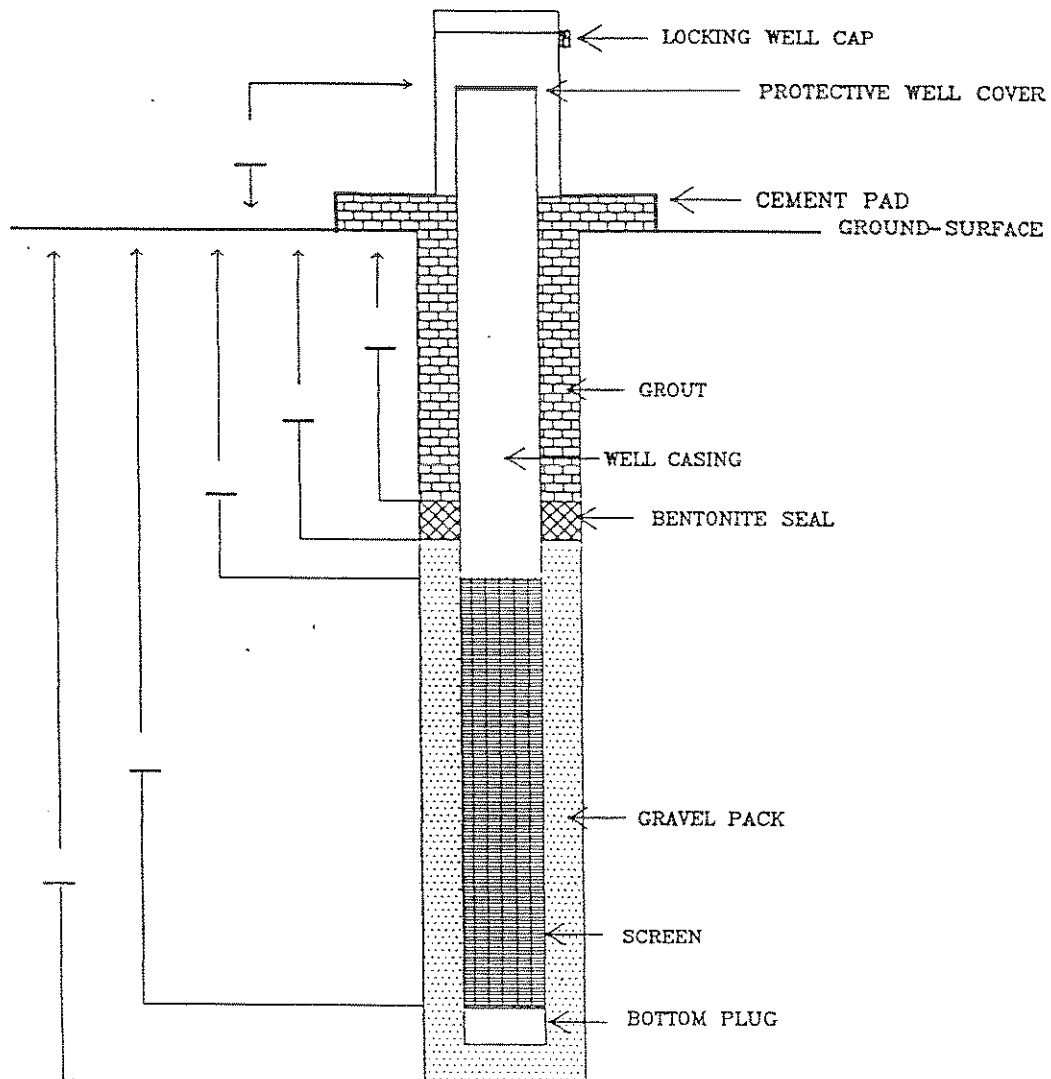
Notes:

APPENDIX B
WELL COMPLETION FORM EXAMPLE

SCHREIBER GRANA & YONLEY, INC.

WELL COMPLETION FORM

OBJECT:		CONTRACTORS:	
ADDRESS:		PROJECT MANAGER:	
SG&Y PROJECT #:		DATE INSTALLED:	
BORING #:		ELEVATION - SURFACE:	CASING:
CASING LENGTH:	DIAMETER:	SCREEN LENGTH:	DIAMETER:
CASING MATERIAL:		SCREEN MATERIAL:	
JOINT TYPE:		SCREEN TYPE:	SIZE:
FILTER PACK TYPE:	SIZE:	BENTONITE SEAL THICKNESS:	
WATER LEVEL BEFORE:	AFTER DEVELOPMENT	DEVELOPMENT METHOD:	

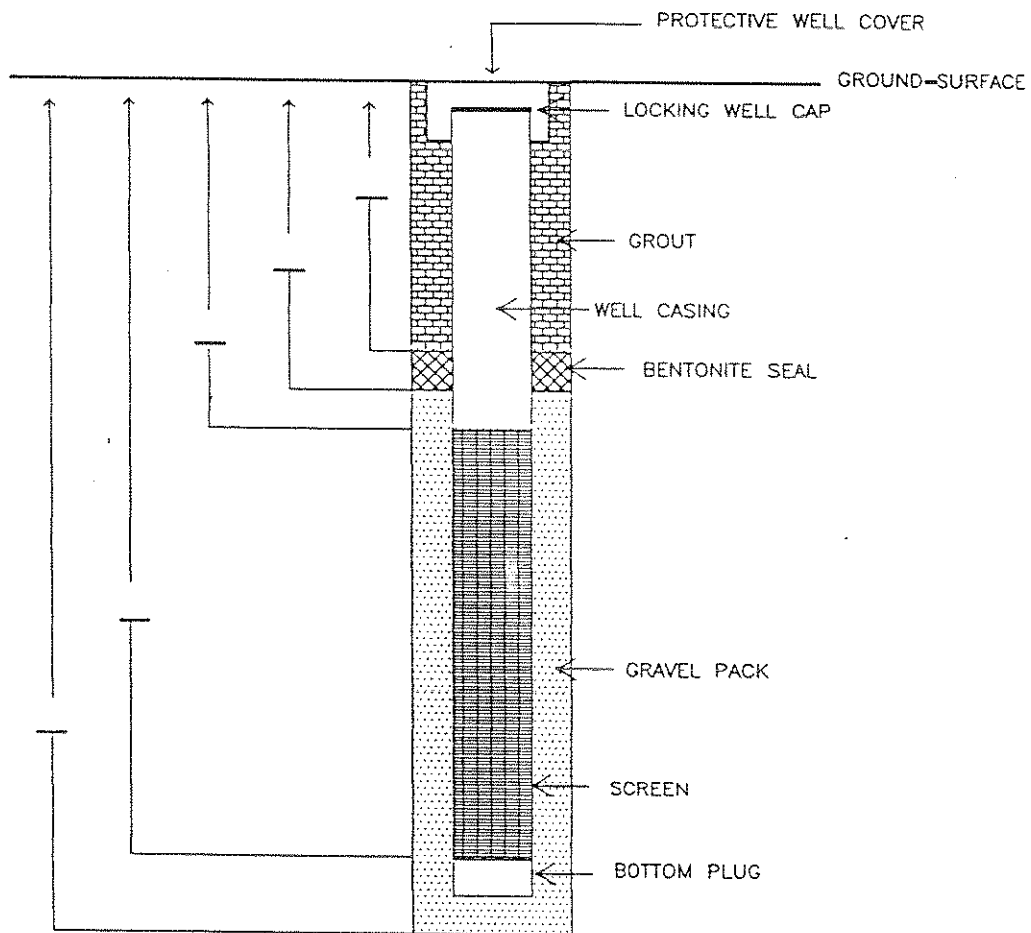


LOCATION

SCHREIBER GRANA & YONLEY, INC.

WELL COMPLETION FORM

PROJECT:		CONTRACTORS:	
ADDRESS:		PROJECT MANAGER:	
SG&Y PROJECT #:		DATE INSTALLED:	
BORING #:		ELEVATION - SURFACE:	CASING:
CASING LENGTH:	DIAMETER:	SCREEN LENGTH:	DIAMETER:
CASING MATERIAL:		SCREEN MATERIAL:	
JOINT TYPE:		SCREEN TYPE:	SIZE:
FILTER PACK TYPE:	SIZE:	BENTONITE SEAL THICKNESS:	
WATER LEVEL BEFORE:	AFTER DEVELOPMENT:	DEVELOPMENT METHOD:	



LOCATION:

APPENDIX C
MONITORING REPORT EXAMPLE



MONITORING REPORT

CLIENT: _____

ADDRESS: _____

PROJECT NO: _____

WELL #	CASING ELEVATION (FT)	DEPTH TO PRODUCT (FT)	DEPTH TO WATER (FT)	PRODUCT THICKNESS (FT)	WATER ELEVATION (FT)

Remarks: _____

Date Observed: _____

Observed By: _____

Computed By: _____
(Initials)

APPENDIX D

GROUNDWATER MONITORING FIELD FORM EXAMPLE

GROUNDWATER MONITORING FIELD FORM

[illegible]

HAZARDOUS WASTE PROGRAM
TANKS SECTION
WORK COORDINATION FORM

ST # 13618

R # 3874

DATE: September 9, 1998

TO: Larry Groner

☒ Jim Growney

☒ Fred Hutson

Bill Wilder

Ellen Davenport

FROM: Debbie Sessler, Planning & Fees Unit

☐ Log as incoming mail & direct to drawer.

☐ Prepare SC/PGC Request Memo.

☐ Review for duplicate sites in database.

ST _____ and ST _____

☐ Review for financial responsibility.

☒ Review for closure. Tanks # 3 & 11

☐ Edit database. (Specify below)

☐ Review for fees.

☐ Review for release determination.

☒ Other. (Specify below).

SPECIFIC COMMENTS

In response to our 12/2/97 invoice for the 1995-1998 registration fees assessed on Tanks 3 and 11 at this facility, Larry Hirsch received a 1/27/98 call from Bill Werner (314-846-9126). Mr. Werner stated that the two tanks were removed. Because this is a remediation site, Larry told Mr. Werner not to do anything with the invoice until the situation could be resolved. Mr. Werner then requested to speak to project manager for this remediation site and Larry transferred him to Marty Kasper.

Please review this file and take appropriate action to update the tanks database appropriately. Note below any action taken and return this form back to me. Thanks.

Debbie Sessler
Requestor Signature

9-9-98
Date

RESOLUTION/ACTION TAKEN

☐ No Action Required/Taken

☐ Direct to File

to P.M.

JHG
Signature of Person Taking Action

5/4/99
Date

UNDERGROUND STORAGE TANK UNIT FACILITY INFORMATION REPORT

FACILITY ID:

OWNER ID:

DATE REC.:	NAME AND ADDRESS	CONTACT AND PHONE:	CONTACT TITLE:	REGISTRATION FEE CYCLE
ST0013618	WEST LAKE QUARRY & MATERIAL CO	ROBERT COX	SAFETY ENG	10/01/1995 09/30/2003
OW10412	13570 ST CHARLES ROCK ROAD	(314)739-1122		
	BRIDGETON, MO 63044		LATITUDE: 38 46 39	
04/14/1986	ST LOUIS COUNTY COUNTY	REGION: SL	LONGITUDE: 90 27 3	

SIGNER: W.E. WHITAKER

TITLE: SAFETY ENG

DNR					TANK	DATE	DATE	Fees	MEET
TANK ID:	TANK TYPE:	STATUS:	CAPACITY:	SUBSTANCE:	MATERIAL:	INSTALLED:	CLOSED:	Paid	98:
1	BELOW	REMOVED	2,000	GASOLINE	STEEL	/ /	/ /	0	NO
2	BELOW	REMOVED	10,000	GASOLINE	STEEL	/ /	/ /	0	NO
3	BELOW	REMOVED	10,000	DIESEL	STEEL	/ /	/ /	0	NO
4	BELOW	REMOVED	10,800	DIESEL	STEEL	/ /	/ /	0	NO
5	BELOW	REMOVED	10,000	DIESEL	STEEL	/ /	/ /	0	NO
6	BELOW	REMOVED	10,000	DIESEL	STEEL	/ /	/ /	0	NO
7	BELOW	REMOVED	10,000	DIESEL	STEEL	/ /	/ /	0	NO
8	BELOW	REMOVED	1,000		STEEL	/ /	/ /	0	NO
9	BELOW	REMOVED	10,000	P.ASPHALT	STEEL	/ /	05/17/1990	0	NO
10	BELOW	REMOVED	10,000	P.ASPHALT	STEEL	/ /	/ /	0	NO
11	BELOW	TEMP. OUT OF SERVICE	10,000	DIESEL	STEEL	/ /	/ /	0	NO

*Removed from ground 4/95
date of last use 7/84*

ST 13618

R 3874

The Stolar Partnership

911 Washington Avenue

Phone: 314-231-2800

St. Louis, Missouri 63101

Fax: 314-436-8400

COPY

FAX MESSAGE

To: Hugh MurrellMDNRFrom: Bill WernerRe: West Lake LandfillFax No: (573) 526-8922Tel No: (573) 751-6822Date: March 10, 1999Client: 2248/001Number of pages including this page: 6

If you do not receive the transmission properly, please call 314-231-2800

Message:

Attached is a copy of my January 8, 1999 letter to Williams & Company. As indicated on the letter, a copy with enclosures was sent to Jim Growney. Because of the length, I have not attached a copy of the 1993 UST Closure Report to this fax. If you need another copy of the Report or of the attached maps, please call and I will obtain copies and forward to you by mail.

RECEIVED

MAR 09 1999

HAZARDOUS WASTE PROGRAM
MISSOURI DEPARTMENT
OF REVENUE

CONFIDENTIALITY NOTE: The information contained in this facsimile message is legally privileged and confidential. Information intended only for the use of the addressee named above. If the reader of this message is not the intended recipient, you are hereby notified that any reading, dissemination, distribution or copying of this facsimile is strictly prohibited. If you have received this teletype in error, please immediately notify us by telephone and return the original message by U.S. Mail to us at the above address. It is the intention of the sender of this facsimile to preserve all protections and privileges attendant to the enclosed document. Thank you.

THE STOLAR PARTNERSHIP

ATTORNEYS AT LAW

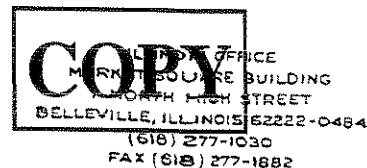
THE LAMMERT BUILDING

911 WASHINGTON AVENUE

ST. LOUIS, MISSOURI 63101-1290

(314) 231-2800

FAX (314) 436-8400

WILLIAM R. WERNER
Email: WRW@STOLARLAW.COMH. M. STOLAR
(RETIRED 1984)

January 8, 1999

Mr. David Pate
Williams & Company
P.O. Box 104116
Jefferson City, Missouri 65110Re: West Lake Landfill UST Closure
ST0013618, R0003874 (Tank # 11)

Dear Mr. Pate:

This letter is in follow up to our telephone conference earlier this month regarding eligibility of the above-referenced tank for reimbursement of remediation expenses from the Missouri Petroleum Storage Tank Insurance Fund (the "Fund"). You indicated that MDNR's records show that our client, West Lake Quarry and Material Company ("West Lake"), continues to operate two tanks on the site, Tank #3 and Tank #11. As explained below, West Lake discontinued operating these tanks at least as early as 1988 and 1993, respectively.

Tank #11 is the tank which is the subject of the ongoing closure (with respect to which we understand that reimbursement has been or will be requested from the Fund on behalf of Maryon Industries, Inc., the operator of the site and the entity which has assumed responsibility for the tank). West Lake removed Tank #11 along with six other tanks on the West Lake site in April, 1993. Upon completion, a Closure Report dated June 14, 1993, documenting the removal of all seven tanks was submitted to the Missouri Department of Natural Resources. A copy of Part A and pertinent sections of Part B of the June 14, 1993 UST Closure Report is enclosed for your information. Please note that the above-referenced tank is referred to by MDNR as Tank #11 in accordance with tank registration information for this site; the tank is referred to in the Closure Report as Tank #7 (and cross-referenced as MDNR #11), because it was the 7th tank pulled in April 1993.

Tank #3 is located on property owned by Bridgeton Landfill, LLC (f/k/a Laidlaw Waste Systems (Bridgeton) Inc., f/k/a West Lake Landfill, Inc.). West Lake discontinued use of Tank #3 sometime prior to July, 1988 when the stock of West Lake Landfill, Inc. was sold to Laidlaw Waste Systems, Inc., and we have confirmed with Bridgeton Landfill that Tank #3 has not been

THE STOLAR PARTNERSHIP

COPY

Mr. David Pate
Williams & Company
January 8, 1999
Page 2

in operation since that time. As I explained on the phone, the location of Tank #3 is geographically distant from Tank #11. For your reference, I have enclosed a map of the site showing ownership as of July 1988, and upon which I have marked the approximate locations of Tank #3 and Tank #11. (Note that the tank referred to in the Closure Report as Tank #3 refers to the tank known to MDNR as Tank #5; the tank known to MDNR as Tank #3 is not discussed in the Closure Report.)

As we discussed, Tank #3 has not been removed because it is located in an area containing radioactive waste generated and disposed of by the Atomic Energy Commission (now, the United States Department of Energy) and sent to the West Lake landfill by Cotter Corporation, NSL, without the knowledge of the landfill. The radioactive materials and any other hazardous substances are being addressed as part of the West Lake Landfill Superfund Site. I have enclosed a copy of an overland gamma survey map, (copies of which have been provided previously to The United States Environmental Protection Agency as lead agency and to MDNR's Superfund Section) showing the area of radioactive contamination. I have marked on this map the approximate location of Tank #3. As can be seen from the enclosed maps, Tank #3 and the area of radioactive contamination is remote from and does not impact the property owned by West Lake and on which Tank #11 was located.

Please confirm that eligible remediation expenses in connection with Tank #11 (to be expended in accordance with a budget approved in advance by the Fund) will be reimbursable under the Fund. Do not hesitate to call me if you need any additional information or clarification.

Very truly yours,



William R. Werner

WRW/jvb
Enclosures

cc: Jim Growney, MDNR (w/ encl)
Vincent M. Jones, Maryon Industries
William E. Whitaker, West Lake

OF LOTS 1, 2, 3, & 4 OF VOSTL PARTITION IN
U.S. SURVEY 151, PART OF LOTS 20, 21, & 22 OF
ST. CHARLES FERRY CO. TRACTS IN U.S. SURVEY
47 & 1934, PART OF U.S. SURVEYS 47, 131, 262
AND 729, ALL IN TOWNSHIPS 46
AND 47 NORTH, RANGE 5 EAST OF THE
15th. PRINCIPAL MERIDIAN
ST. LOUIS COUNTY, MISSOURI.

Approximate
location of
Tank #3

Approximate Location
of Tank # 11

1. The first step is to identify the main topic of the document.

2. The second step is to identify the main purpose of the document.

3. The third step is to identify the main audience of the document.

4. The fourth step is to identify the main message of the document.

5. The fifth step is to identify the main conclusion of the document.

STAFF IS ATTENDING

MAR-10-1999 13:05

[illegible]

SURVEY

113
1.258
113

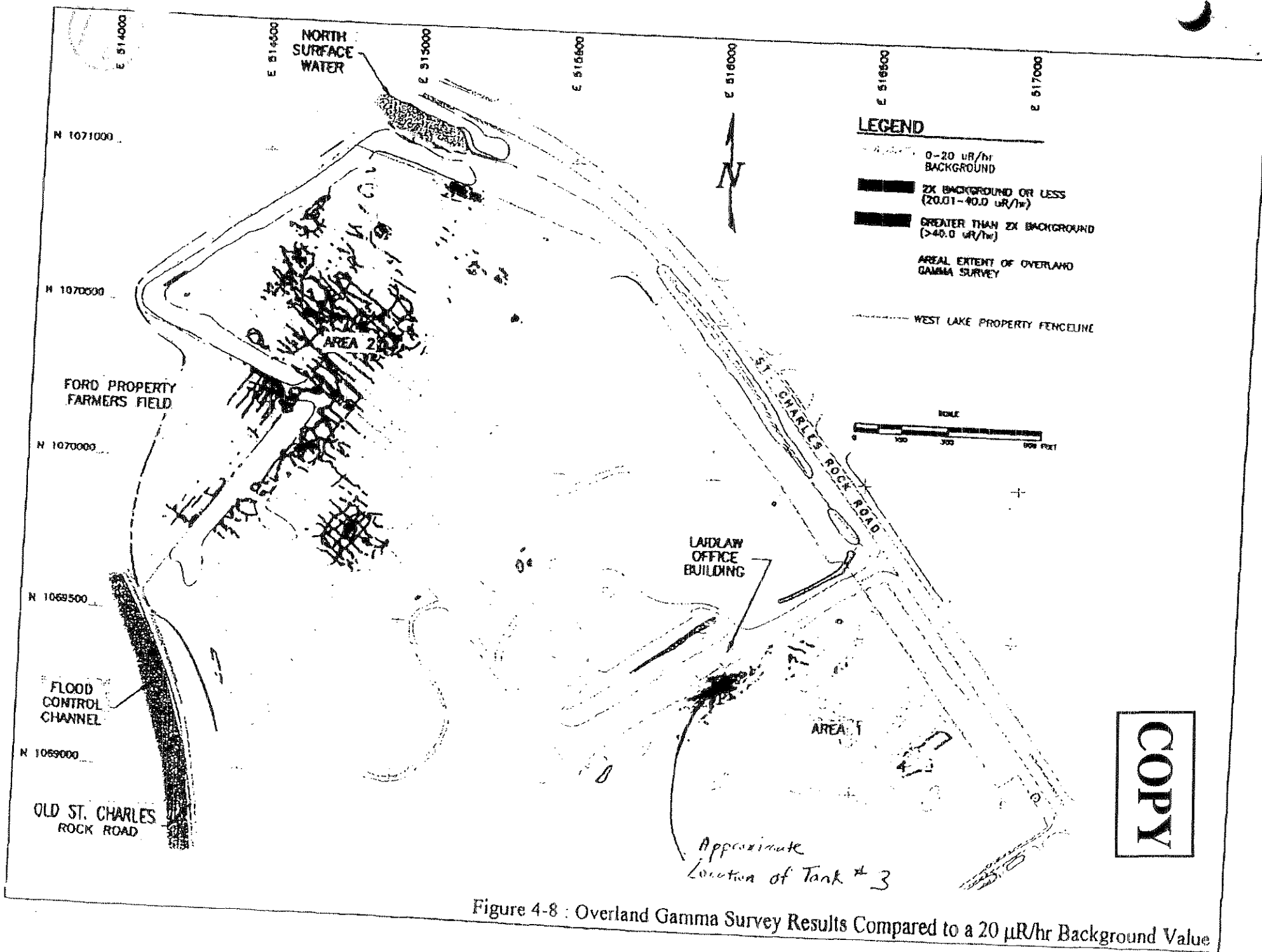


Figure 4-8 : Overland Gamma Survey Results Compared to a 20 $\mu\text{R/hr}$ Background Value

OWNER NAME WEST LAKE QUARRY & MATERIAL CO

OWNER NUMBER OW10412

FEE GROUP NO. 2 DATE OF INTITAL BILLING 04/12/91


TODAY'S DATE April 12, 1995

UST REGISTRATION FEES STATUS REPORT

FAC ID#	## USTS	REGUL FEE PD	REGUL FEE DUE	ADMIN FEE PD	ADMIN FEE DUE	TOTAL DUE
UT13614	4	300.00	0.00	400.00	0.00	0.00
UT13615	5	75.00	300.00	500.00	0.00	300.00
UT13616	3	225.00	0.00	300.00	0.00	0.00
UT13617 SOLD	4	75.00	225.00	400.00	0.00	225.00
UT13618	9-11	675.00	0.00	1100.00	0.00	0.00
4 FAC	21-23	1350.00	525.00	2700.00	0.00	525.00

(THIS REPORT MAY BE USED AS AN INVOICE)

REGULATION FEE = \$75 PER TANK (\$15 PER TANK PER YEAR INSTALLMENT)
ADMINISTRATIVE FEE = \$100 PER TANK (ONE-TIME FEE)


June M. Dandridge
UST Fee Collector

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Mel Carnahan, Governor • David A. Shorr, Director

DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

March 9, 1995

ESP FILE NO.
LU#3874

Mr. Vince Jones
Marion Industries, inc.
150 Weldon Parkway
Maryland Heights, MO 63043

Dear Mr. Jones:

RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

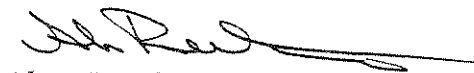
The Leaking Underground Storage Tank (LUST) Unit of the Missouri Department of Natural Resources has received and reviewed the Schreiber, Grana & Yonley Report dated February 7, 1995. The LUST Unit looks forward to receiving and reviewing your free product recovery reports in the near future.

Please submit, within 45 days from receipt of this letter, a site characterization plan for this site.

results
If you have any questions, please do not hesitate to contact Dave Bellamy at the Leaking Underground Storage Tank Unit at 314/526-3379 or 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY


Alan Reinkemeyer
Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

AR:dbj

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office
Mr. B. Whitaker, Westlake Companies, 12976 St. Charles Rock Road,
Bridgeton, MO 63044

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Mel Carnahan, Governor • David A. Shott, Director

DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

May 17, 1995

ESP FILE NO.
LU#3874

Mr. Vince Jones
Marion Industries, Inc.
150 Weldon Parkway
Maryland Heights, MO 63043

Dear Mr. Jones:


RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

The Leaking Underground Storage Tank (LUST) Unit of the Missouri Department of Natural Resources (MDNR) has received and reviewed the Schreiber, Grana, & Yonley, Inc. Free Product Recovery Report for February, dated March 21, 1995. Please note that in the MDNR letter dated March 9, 1995, a site characterization plan was requested. It is requested that this document be provided to the LUST Unit for the above site within 30 days.

If you have any questions, please do not hesitate to contact Steve Johnston at the Leaking Underground Storage Tank Unit at 314/526-6023 or 314/526-3352.

Very truly yours,

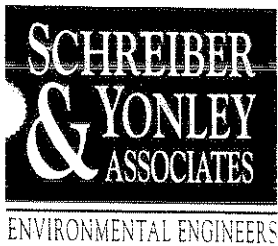
DIVISION OF ENVIRONMENTAL QUALITY


Alan Reinkemeyer
Supervisor

Leaking Underground Storage Tank Unit
Environmental Services Program

AR:sjj

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office
Mr. B. Whitaker, Westlake Companies, 12976 St. Charles Rock Road,
Bridgeton, MO 63044
Mr. Ed Shepard, Schreiber, Grana, & Yonley, Inc., 271 Wolfner Drive,
St. Louis, MO 63026



271 Wolfner Drive • Saint Louis, Missouri 63026
314/349-8399 • Fax 314/349-8384

May 18, 1998

Mr. Marty Kasper
Missouri Department of Natural Resources
Tanks Section
P.O. Box 176
Jefferson City, MO 65102-0176

RECEIVED

AUG 17 1998

RE: Groundwater Sampling
Maryon Industries, Inc.
13570 St. Charles Rock Road
Bridgeton, Missouri
ST0013618, R0003874

HAZARDOUS WASTE UNIT
MISSOURI DEPARTMENT OF
NATURAL RESOURCES

Dear Mr. Kasper:

Schreiber, Yonley & Associates, on behalf of Maryon Industries, Inc., (MII) is submitting the following scope of work for sampling on-site groundwater monitoring wells. This work will take place at the MII facility located at 13570 St. Charles Rock Road, in Bridgeton, Missouri.

The following text describes the currently anticipated scope of work.

Scope of Work

1. Measure the depth to groundwater utilizing an electronic water level indicator or an electronic interface probe if free product is encountered.
2. Following the measurement of the groundwater depth in each well, the well will be purged by removing a minimum of three (3) well casing volumes of groundwater. Well purging activities will be accomplished using a dedicated, disposable polyethylene bailer.

Purge water generated during the purging activities will be contained and stored on-site in labeled, 55-gallon, DOT-approved steel drums. Purge water will be stored on-site, pending receipt of the groundwater sample analytical results from the monitoring wells. Purge water generated from the monitoring well purging activities will be properly disposed.



Mr. Marty Kasper

May 18, 1998

Page 2

3. Upon completion of well purging activities, a groundwater sample will be collected from each monitoring well utilizing a disposable, polyethylene bailer. The bailer will be lowered into the water column within the monitoring well. Upon removal of the bailer, the groundwater sample will be poured directly into precleaned, laboratory supplied sample containers. The sample containers will be labeled with the collection date and time, sample identification, type of preservative utilized, and collector's name. The sample containers will be placed in a cooler and cooled to approximately four (4) degrees Celsius and shipped via next day delivery to the selected analytical laboratory. A chain-of-custody form will be generated and included with the samples for transport to the laboratory.
4. The groundwater samples will be analyzed for total petroleum hydrocarbons (TPH); benzene, toluene, ethylbenzene, and xylenes (BTEX); and methyl tertiary butyl ether (MTBE) in accordance with method OA-1/OA-2.
5. Upon completion of the monitoring well sampling activities and receipt of analytical results for the monitoring wells, Schreiber, Yonley & Associates will develop a summary report. The report will detail the monitoring well sampling activities as well as present field and analytical data from the previous sampling events.

Laboratory estimates are included as Attachment A and the Schreiber, Yonley & Associates cost estimate for professional services and field oversight activities is included as Attachment B.

Should you have any questions or need additional information, please do not hesitate to contact me at (314) 349-8399.

Sincerely,

SCHREIBER, YONLEY & ASSOCIATES



Edward A. Shepard, Jr., P.E.
Senior Engineer

EAS/jb

Attachments

cc: Mr. Mike Jones - Maryon Industries, Inc.

MIT980125\GWSMPLNG.LTR



ATTACHMENT A
LABORATORY ESTIMATES

ENVIRONMETRICS, INC.

11401 Moog Drive
St. Louis, MO 63146
(314) 432-0550

May 12, 1998
Proposal # E549u

Ed Shepard
Schreiber, Yonley & Associates
271 Wolfner Drive
Fenton, MO 63026

Project: 980125

Dear Mr. Shepard,

Environmetrics, Inc. is pleased to submit this quotation based on your conversation with Ann Carlson on May 12, 1998. Environmetrics, Inc. will analyze five water samples, taken by your staff, for the following parameters:

<u>Parameter</u>	<u>Method</u>	<u>Price/Sample</u>
OA1:		
TPH(Gasoline Range-GRO)	8015V/8020	\$ 35.00
BTEX + MTBE		
OA2:		
TPH(Diesel Range-DRO)	8015E	\$ 35.00

The above prices reflect our normal turnaround time of 10 working days. All priority samples will be subject to the following surcharge factors:

5 working days	1.25 x
3 working days	1.75 x
1-2 working days	2.25 x
Sameday	3.5 x

Availability of priority turnaround times may be affected by the volume of samples. To ensure quality service, all priority samples must be scheduled with Environmetrics prior to sampling. Environmetrics will provide all sample containers, labels, preservatives, and coolers at no additional charge.

If you have any questions, please call me at (314) 432-0550.

Thank You For Your Business.

Sincerely,


Elizabeth Curtright
Project Manager



SPECIALIZED ASSAYS INC. • 2960 Foster Creighton Dr. • P.O. Box 40566 • Nashville, Tennessee 37204-0566
615-726-0177 • 1-800-765-0980 • Fax 615-726-3404

Analytical Quotation

Company: Schreiber Yonley & Associates
Client #: 5314
Attention: Ed Shepard
Address: 271 Wolfner Drive
City/St/Zip: St. Louis, MO 63026
Phone: 314-349-8399
Fax: 314-349-8384

Bid Date: 5/11/98
Valid Until: 7/15/98
Quote No: 051198BS199
Project: 980125

Parameters	Number Of Samples	Fee Per Sample
OA-1 (TPH as gas/BTEX/MtBE)	5 water	\$40.00
OA-2	5 water	\$32.00

Standard documentation and routine turnaround apply. **BE SURE TO PUT THE QUOTE NUMBER ON THE CHAIN OF CUSTODY TO INSURE CORRECT BILLING.**

As a reminder, we provide these services as part of regular business:

- Supply sample containers and coolers, and ship them to you or your site.
- Provide printed chain of custody and FEDEX forms.
- Pay the FEDEX charges necessary to ship your samples to our laboratory.
- Accept delivery of samples on Saturday.
- At your request, notify you (by fax) when your samples arrive at the lab.
- Supply data by:
 - By fax, automatically from our LIMS.
 - Hardcopy, signed and mailed to you.
 - On diskette or electronically, via modem.

Sincerely,

Bruce C. Schlatter
Regional Account Manager

AMERICAN TECHNICAL & ANALYTICAL SERVICES, INC.

875 Fee Fee Road • Maryland Heights, MO 63049 • (314) 434-4570 • FAX (314) 434-0080

May 12, 1998

Ed Shepard
Schreiber Yonley & Associates, Inc.
271 Wolfner Drive
St. Louis, MO 63026

RE: Cost Quotation -Ref. #980111(soils) Ref. #980125(waters)
ATAS # 2025

Dear Mr. Shepard:

On behalf of ATAS I am pleased to offer you the following quotation for analytical services. Samples will be taken by your staff and shipped to ATAS.

Parameter	Method	Sample #	Unit Price	MATRIX
Paint Filter	SW 9095	1	9.00	Soil
Open Cup Flash Point	SW 1010	1	20.00	Soil
TCLP Pb	SW 6010/SW 1310	1	75.00	Soil
BTEX & MTBE	OA-1	10/5	40.00	Soil/Water
TPH	OA-2	10/5	45.00	Soil/Water

Please note that the above prices are based on a 10 work day turnaround time. Samples must be received before 12:00 noon to be considered a work day. Samples received after noon are considered the next work day. Prices include the following:

- listed methodology
- a standard report format which consist of method blanks, sample data, and QA/QC summary
- sample containers and shipping material
- non-priority shipping of sample kits to your office or job site
- Normal quality control samples which include method blanks, laboratory control spikes, and batch MS/MSD
- Quotation is valid for 90 days. Our term is net 30 days

ATAS and the affiliate laboratories are currently participating in the USEPA- Contract Lab Program (CLP) for the analysis of organic and inorganic compounds. We are also working for clients nation wide under COE, EPA, AFCEE, HAZWRAP, DERP, NEESA CLEAN programs and have more than 25 state certifications.

If you have any questions please do not hesitate to call. ATAS is looking forward to working with you on this project.

Sincerely,



Wendy S.L. Hacker
Client Services Coordinator

ATAS

"Professional Commitment"

ATTACHMENT B

SCHREIBER, YONLEY & ASSOCIATES ESTIMATE

COST ESTIMATE
13570 St. Charles Rock Road
Bridgeton, Missouri

Item 1 - Workplan Development

Senior Engineer	\$85/hr	5 hrs	\$425.00
Clerical	\$35/hr	3 hrs	\$105.00

Subtotal (Labor) \$530.00

Photocopying, Facsimile, Telephone, Postage			\$30.00
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Subtotal (Materials) \$30.00

ITEM 1 TOTAL COST \$560.00

Item 2 - Monitoring Well Sampling

Engineering Technician	\$40/hr	8 hrs	\$320.00
Senior Engineer	\$85/hr	2 hrs	\$170.00

Subtotal (Labor) \$490.00

Photocopying, Facsimile, Telephone, Postage			\$25.00
PPE			\$10.00
Bailers			\$40.00
Drum			\$25.00
Ice			\$5.00

Subtotal (Materials) \$105.00

Company Truck			\$50.00
Water Level			\$15.00
Interface Probe			\$30.00

Subtotal (Equipment) \$95.00

OA-1/OA-2	\$81/Sample	5 Samples	\$405.00
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Subtotal (Analytical) \$405.00

Drum Disposal	\$175/Drum	1 Drum	\$175.00
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Subtotal (Disposal) \$175.00

ITEM 2 TOTAL COST \$1,270.00

COST ESTIMATE (cont'd)
13570 St. Charles Rock Road
Bridgeton, Missouri

Item 3 - Report Development/Submittal

Environmental Scientist/Engineer I	\$60/hr	4 hrs	\$240.00
Senior Engineer	\$85/hr	1 hr	\$85.00
CADD	\$50/hr	3 hrs	\$150.00
Clerical	\$35/hr	2 hrs	\$70.00

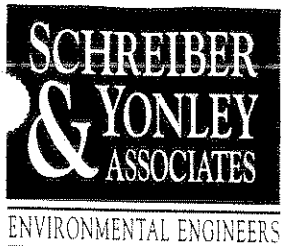
Subtotal (Labor) **\$545.00**

Photocopying, Facsimile, Telephone, Postage \$35.00

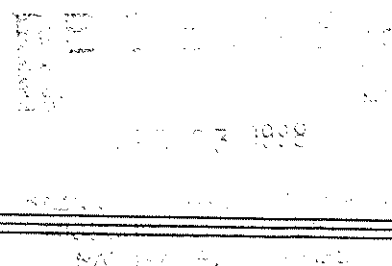
Subtotal (Materials) **\$35.00**

ITEM 3 TOTAL COST **\$580.00**

TOTAL PROJECT COST **\$2,410.00**



271 Wolfner Drive • Saint Louis, Missouri 63026
314/349-8399 • Fax 314/349-8384



April 22, 1998

Mr. Marty Kasper
Missouri Department of Natural Resources
Tanks Section
P.O. Box 176
Jefferson City, Missouri 65102-0176

RE: West Lake Quarry and Materials (former), 13570 St. Charles Rock Road,
Bridgeton, MO - ST0013618, R0003874

Dear Mr. Kasper:

Pursuant to your March 5, 1998 correspondence, Schreiber, Yonley & Associates, on behalf of Maryon Industries, Inc., is submitting this letter to update the status of activities at the above referenced facility.

Currently, a HORNER EZY SKIMMER®, distributed by Horner Creative Products, Inc., is being utilized to recover product from monitoring well MW-1. A site diagram is included as Attachment 1. This method of product recovery consists of suspending a skimmer tube in the well. The skimmer tube has a screen at the top which allows petroleum product to flow into the skimmer, but retards water from entering. The petroleum is collected in the tube and is emptied through a drain in the bottom of the skimmer.

Maryon Industries, Inc. personnel empty the contents of the skimmer into a drum located on-site on a regular basis. The amount of product in the skimmer is measured and recorded along with the date and time. Recovery logs from December 1995 through March 1998 are included as Attachment 2. Approximately five (5) gallons of product has been recovered during this period.

In addition to the continued free product recovery activities, Schreiber, Yonley & Associates is preparing a workplan and budget for the collection of one (1) groundwater sample from each on-site monitoring well. Upon completion of the sampling activities and sample analysis, a summary report will be submitted to the Missouri Department of Natural Resources (MDNR). Maryon Industries, Inc. will continue to monitor the groundwater, collect free product, and submit data to MDNR as required.

Should you have any questions, please do not hesitate to contact me at (314) 349-8399.

Sincerely,

SCHREIBER, YONLEY & ASSOCIATES

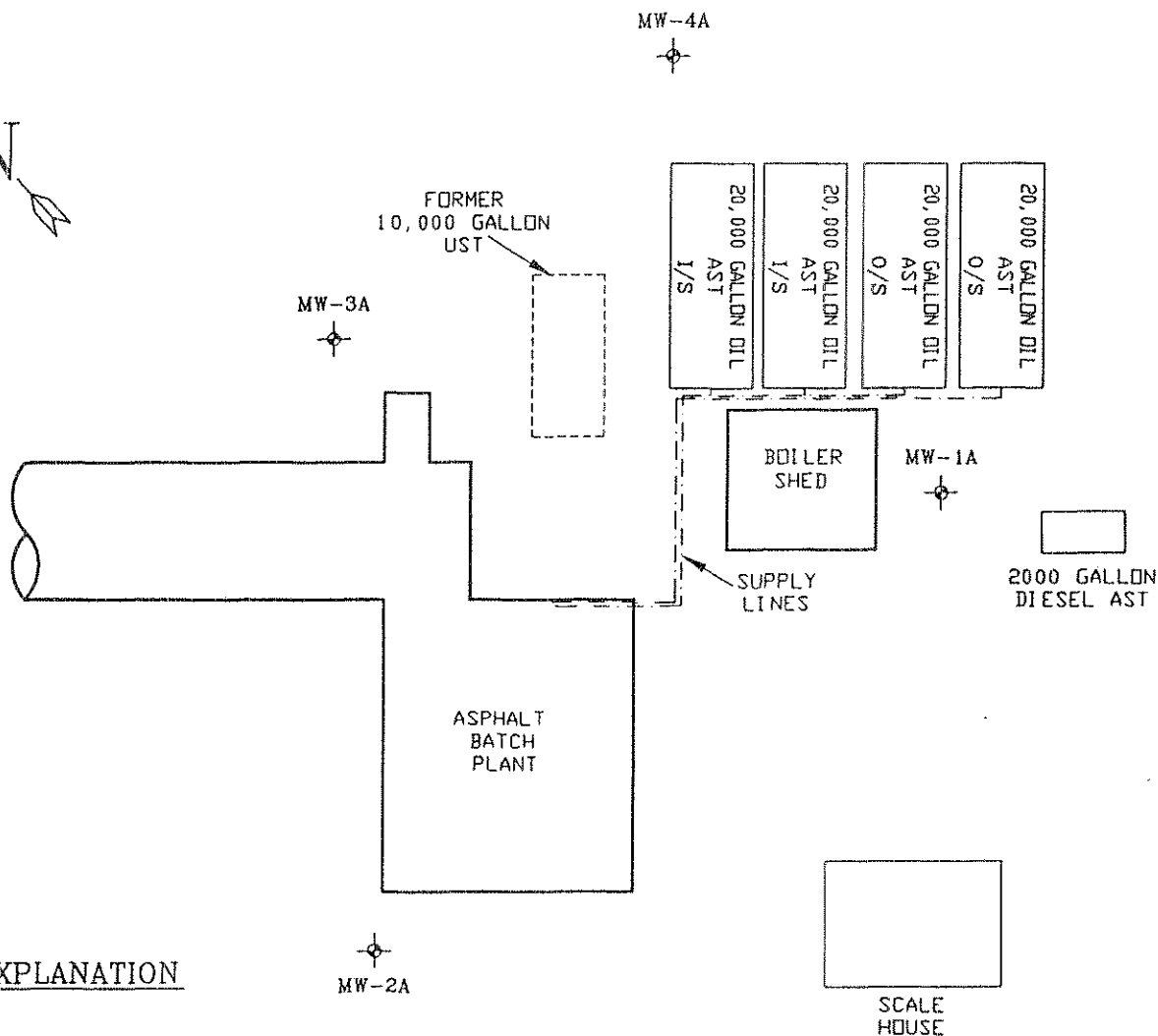
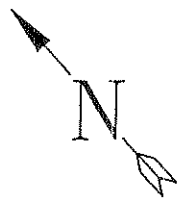
Edward A. Shepard, Jr., P.E.
Senior Engineer

cc: Mike Jones - Maryon Industries, Inc.


MIT980125/KASPER.LTR



ATTACHMENT 1



EXPLANATION

-  MONITORING WELL
- AST ABOVEGROUND STORAGE TANK
- I/S IN SERVICE
- O/S OUT OF SERVICE
- UST UNDERGROUND STORAGE TANK

MONITORING WELL LOCATION MAP
MARYON INDUSTRIES, INC.
WESTLAKE SITE
BRIDGETON, MISSOURI

ATTACHMENT A

SCALE:
1"=20'

DWG. #
M101-1

**SCHREIBER
& YONLEY
ASSOCIATES**
ENVIRONMENTAL ENGINEERS

ATTACHMENT 2

PRODUCT RECOVERY LOG

Date	Time	Inches of Product
12.4.95	13.00	30"
12-5-95	0700	12"
12-6-95	0930	21.5"
12-7-95	0730	13"
12-8-95	0800	18.5"
12-11-95	0830	31"
12.12.95	1130	21.
12-13-95	1100	13"
4-2-96	14:45	5.25"
4-26-96	09:30	3"
4-30-96	09:30	10.5"
5-6-96	1400	1.5"
5-13-96	0630	2."
5-18-96	0630	1"
5-20-96	0630	1"
5-28-96	0700	2"
5-31-96	0700	2 1/2"
6-3-96	0630	3"
6-7-96	10:00	2"
6-11-96	700	1 3/4"
6-14-96	1230	1 1/2" V.
6-18-96	0600	3"
6-21-96	0600	2"
6-24-96	0600	2" 5"
6-28-96	0100	3.
7-1-96	0600	1.5"

PRODUCT RECOVERY LOG

Date	Time	Inches of Product
7-5-96	0600	2.5"
7-8-96	0600	3"
7-12-96	1400	3"
7-15-96	0700	3"
7-24-96	0500	2.34
7-26-96	0430	3"
7-31-96	0930	3"
8-5-96	1300	3 1/4"
8-9-96	900	4 1/2"
8-16-96	1100	3 1/2"
8-19-96	1000	5"
8-26-96	1200	4"
9-3-96	0830	3.75"
9-6-96	1030	4"
9-9-96	0600	20"
9-13-96	1430	25"
9-16-96	0915	21"
9-25-96	1330	26"
9-27-96	0900	15"
9-30-96	1000	19"
10-4-96	1020	20.5"
10-8-96	0630	21.5"
10-11-96	1215	18"
10-16-96	1500	25"
10-18-96	0900	15 1/2"
10-23-96	0800	18"

PRODUCT RECOVERY LOG

[illegible]

PRODUCT RECOVERY LOG

Date	Time	Inches of Product
2-21-97	1300	30"
2-24-97	0800	21"
3-3-97	0700	20"
3-10-97	0900	3"
3-14-97	0800	4.5"
3-17-97	0630	3"
3-21-97	0630	3"
3-24-97	0800	2.5"
3-28-97	0700	4"
3-31-97	0700	3"
4-4-97	0630	4"
4-7-97	0630	6"
4-11-97	0800	6"
4-14-97	0615	4"
4-18-97	0700	4"
4-21-97	0630	4 1/2"
4-25-97	0630	4"
5-2-97	0600	3 1/2"
5-5-97	0700	4 1/2"
5-9-97	0830	3"
5-12-97	0630	4"
5-16-97	0700	4"
5-23-97	0800	6.5"
5-27-97	0700	5"
5-30-97	0700	5"
6-2-97	830	4 1/2"

PRODUCT RECOVERY LOG

Date	Time	Inches of Product
6.4.97	10.00	51 N
6.5.97	1.00	31 N
6-9-97	0630	4"
6.9.97	0700	31 N
6.16.97	0730	51 IN
6-23-97	0730	3"
6-27-97	0730	4"
6-30-97	010	2 1/2
7-7-97	0700	51 IN
7-12-97	0700	10"
7-14-97	1200	7 IN
7-21-97	0700	12"
7-28-97	0700	18 1/1
8.1.97	0700	18 5/10
8.12.97	0100	21 IN
8.25.97	0900	20 1/2 IN
9.2.97	0700	27 IN
9-8-97	1300	15"
9.15.97	0700	19 IN
9.19.97	1300	15"
9.22.97	0700	14 IN
9.27.97	0900	18 IN
9.30.97	0600	12 IN
10.8.97	0900	8 IN
9.14.97	0900	23 IN
9.17.97	0900	16.1 IN

PRODUCT RECOVERY LOG

[illegible]



STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
HAZARDOUS WASTE PROGRAM/TANKS SECTION
UNDERGROUND STORAGE TANK INVOICE

st 13618

DATE: September 18, 1997
PAYMENT DUE: October 18, 1997

REGISTRATION PERIOD: 10/01/1995 - 09/30/1998

FACILITY: ST0013618

WEST LAKE QUARRY & MATERIAL CO
13570 ST CHARLES ROCK ROAD
BRIDGETON, MO 63044

OWNER: OW10412

WEST LAKE QUARRY & MATERIAL CO
12976 ST CHARLES ROCK ROAD
BRIDGETON, MO 63044

DNR TANK #	TANK STATUS	TANK TYPE	TANK CAPACITY	SUBSTANCE:	ONE TIME ADMIN FEE ASSESSED	REGISTRATION FEE ASSESSED
3	IN USE	BELOW	10,000	DIESEL	\$100	\$45
11	IN USE	BELOW	10,000	DIESEL	\$100	\$45

TOTAL ASSESSED:	\$200.00	\$90.00
PREVIOUS PAYMENTS:	\$200.00	\$0.00
AMOUNT DUE:		\$90.00

IF YOU WISH TO EXTEND YOUR REGISTRATION THROUGH 2003,
ADD AN ADDITIONAL \$150 TO THE AMOUNT DUE AND REMIT \$240.

Should you believe that our records are in error, please respond in writing and enclose supporting documentation to the attention of the Hazardous Waste Program, Tanks Section, P.O. Box 176, Jefferson City, MO 65102-0176. Suggested supporting documentation includes copies of cancelled checks, amended registration forms, and copies of past invoices and receipts.

PLEASE DETACH LOWER PORTION AND RETURN WITH YOUR PAYMENT

Admin	\$0.00
Reg	\$90.00

Mail Payment To
Missouri Department of Natural Resources
Hazardous Waste Program/Tanks Section
P.O. Box 176, Jefferson City, MO 65102

OWNER: OW10412

WEST LAKE QUARRY & MATERIAL CO
12976 ST CHARLES ROCK ROAD
BRIDGETON, MO 63044

PAYMENT DUE: October 18, 1997
AMOUNT DUE: \$90.00

AMOUNT PAID:

FACILITY: ST0013618

WEST LAKE QUARRY & MATERIAL CO
13570 ST CHARLES ROCK ROAD
BRIDGETON, MO 63044

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Mel Carnahan, Governor • David A. Short, Director

DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

SEP 18 1997

Dear Tank Owner:

Enclosed is an invoice for the registration of regulated storage tanks in the state of Missouri. This invoice is for the registration cycle beginning in 1995.

We are now sending out an invoice for each individual site at which you have tanks. If you own more than one site, you will receive an invoice for each site. You may receive these invoices at different times as explained below. If you receive invoices for more than one site, you may pay with one check, so long as you return the lower portion of all invoices so that we can accurately credit and track your payments.

Active sites have been divided into three billing groups in order to stagger registration cycles to allow quicker processing of fees. These billing groups are: 1995-1998, 1995-1999, and 1995-2000. Facilities in the first two groups have the option of paying fees for an additional five years. Upon receiving your payment, the Missouri Department of Natural Resources (MDNR) will issue a Certificate of Registration and a receipt to your facility.

This site falls into the first group, and you are being billed for 1995-1998, with the option of paying your fees through 2003. If you extend your registration by paying fees through 2003, you will not be billed again in 1998. The amounts you would need to pay in either case are provided on the invoice.

A few sites have paid fees beyond the 1990-1995 cycle. If this applies to your facility, please notify us in writing and enclose supporting documentation so that we may verify these payments.

Just a reminder; the deadline for the 1998 upgrades is fast approaching. The department requires an amended registration form whenever the status of a facility changes. This requirement includes improvements made to meet 1998 upgrades. If you have technical questions regarding these upgrades or need copies of the registration form, please contact the Closure and Registration Unit of the Tanks Section at (573) 751-6882 or write to the letterhead address.

Please note that the enclosed invoice is based upon information contained in our database. If you believe that our database information is incorrect, or if you have any questions regarding this invoice, write to the attention of: Hazardous Waste Program, Tanks Section, P.O. Box 176, Jefferson City, MO 65102-0176 or call (573) 751-6822.

Sincerely,

HAZARDOUS WASTE PROGRAM

Cindy Kemper
Cindy Kemper
Director

CK:lge

Enclosure



STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
HAZARDOUS WASTE PROGRAM/TANKS SECTION
UNDERGROUND STORAGE TANK INVOICE

DATE: December 02, 1997

REGISTRATION PERIOD: 10/01/1995 - 09/30/1998

PAYMENT DUE: January 01, 1998

OWNER ID: OW10412
WEST LAKE QUARRY & MATERIAL CO
12976 ST CHARLES ROCK ROAD
BRIDGETON, MO 63044

FACILITY ST0013618
WEST LAKE QUARRY & MATERIAL CO
13570 ST CHARLES ROCK ROAD
BRIDGETON, MO 63044

DNR TANK #	TANK STATUS	TANK TYPE	TANK CAPACITY	SUBSTANCE:	ONE TIME ADMIN FEE ASSESSED	REGISTRATION FEE ASSESSED
3	IN USE	BELOW	10,000	DIESEL	\$100	\$45
11	IN USE	BELOW	10,000	DIESEL	\$100	\$45

TOTAL ASSESSED:	\$200.00	\$90.00
PREVIOUS PAYMENTS:	\$200.00	\$0.00
AMOUNT DUE:		\$90.00

IF YOU WISH TO EXTEND YOUR REGISTRATION THROUGH 2003,
ADD AN ADDITIONAL \$150 TO THE AMOUNT DUE AND REMIT \$240.

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PLEASE DETACH LOWER PORTION AND RETURN WITH YOUR PAYMENT

Admin	\$0.00
Reg	\$90.00

Mail Payment To
Missouri Department of Natural Resources
Hazardous Waste Program/Tanks Section
P.O. Box 176, Jefferson City, MO 65102

OWNER: OW10412
WEST LAKE QUARRY & MATERIAL CO
12976 ST CHARLES ROCK ROAD
BRIDGETON, MO 63044

PAYMENT DUE: January 01, 1998
AMOUNT DUE: \$90.00

AMOUNT PAID:

FACILITY: ST0013618
WEST LAKE QUARRY & MATERIAL CO
13570 ST CHARLES ROCK ROAD
BRIDGETON, MO 63044

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Mel Carnahan, Governor • David A. Shorr, Director

DIVISION OF ENVIRONMENTAL QUALITY

P.O. Box 176 Jefferson City, MO 65102-0176

DEC 2 1997

Dear Tank Owner:

Enclosed is an invoice for the registration of regulated storage tanks in the state of Missouri. This invoice is for the registration cycle beginning in 1995.

An invoice was sent to the facility address we have on record and returned to us as nondeliverable. Please complete and return the enclosed registration form along with your payment.

If you own more than one site, you will receive an invoice for each site. You may receive these invoices at different times as explained below. If you receive invoices for more than one site, you may pay with one check, so long as you return the lower portion of all invoices so that we can accurately credit and track your payments.

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This site falls into the first group, and you are being billed for 1995-1998, with the option of paying your fees through 2003. If you extend your registration by paying fees through 2003, you will not be billed again in 1998. The amounts you would need to pay in either case are provided on the invoice.

A few sites have paid fees beyond the 1990-1995 cycle. If this applies to your facility, please notify us in writing and enclose supporting documentation so that we may verify these payments.

Just a reminder: the deadline for the 1998 upgrades is fast approaching. The department requires an amended registration form whenever the status of a facility changes. This requirement includes improvements made to meet the 1998 upgrades. If you have technical questions regarding these improvements or need copies of the registration form, please contact the Closure and Registration Unit of the Tanks Section at (573) 751-6822 or write to the letterhead address.

Please note that the enclosed invoice is based upon information contained in our database. If you believe that our database information is incorrect, or if you have any questions regarding this invoice, write to the attention of: Hazardous Waste Program, Tanks Section, P.O. Box 176, Jefferson City, MO 65102-0176 or call (573) 751-6822.

Sincerely,

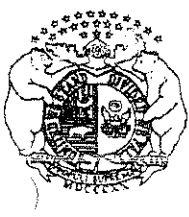
HAZARDOUS WASTE PROGRAM



Kristine Ricketts, Chief
HWP - Tanks Section

KR:sse

Enclosure



STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
HAZARDOUS WASTE PROGRAM/TANKS SECTION
UNDERGROUND STORAGE TANK INVOICE

513618
COPY

DATE: September 18, 1997
PAYMENT DUE: October 18, 1997

REGISTRATION PERIOD: 10/01/1995 - 09/30/1998

FACILITY: ST0013618
WEST LAKE QUARRY & MATERIAL CO
13570 ST CHARLES ROCK ROAD
BRIDGETON, MO 63044

OWNER: OW10412
WEST LAKE QUARRY & MATERIAL CO
12976 ST CHARLES ROCK ROAD
BRIDGETON, MO 63044

DNR TANK #	TANK STATUS	TANK TYPE	TANK CAPACITY	SUBSTANCE:	ONE TIME ADMIN FEE ASSESSED	REGISTRATION FEE ASSESSED
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Missouri Department of Natural Resources
Hazardous Waste Program/Tanks Section
P.O. Box 176, Jefferson City, MO 65102

OWNER: OW10412
WEST LAKE QUARRY & MATERIAL CO
12976 ST CHARLES ROCK ROAD
BRIDGETON, MO 63044

PAYMENT DUE: October 18, 1997
AMOUNT DUE: \$90.00

ACILITY: ST0013618
WEST LAKE QUARRY & MATERIAL CO
13570 ST CHARLES ROCK ROAD
BRIDGETON, MO 63044

AMOUNT PAID:

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Mel Carnahan, Governor • David A. Shorr, Director

COPY

DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

SEP 18 1997

Dear Tank Owner:

Enclosed is an invoice for the registration of regulated storage tanks in the state of Missouri. This invoice is for the registration cycle beginning in 1995.

We are now sending out an invoice for each individual site at which you have tanks. If you own more than one site, you will receive an invoice for each site. You may receive these invoices at different times as explained below. If you receive invoices for more than one site, you may pay with one check, so long as you return the lower portion of all invoices so that we can accurately credit and track your payments.

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Sincerely,

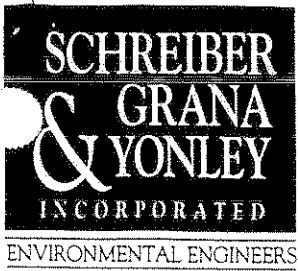
HAZARDOUS WASTE PROGRAM

Cindy Kemper

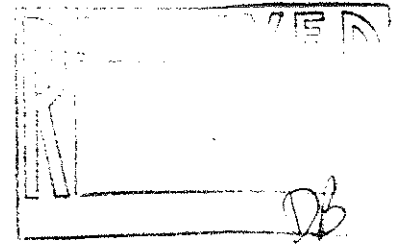
Cindy Kemper
Director

CK:lge

Enclosure



271 Wolfner Drive • Saint Louis, Missouri 63026
314/349-8399 • Fax 314/349-8384



June 6, 1995

Mr. Dave Bellamy
Missouri Department of Natural Resources
Leaking Underground Storage Tank Unit
P.O. Box 176
Jefferson City, Missouri 65102

RE: Maryon Industries, Inc.
Westlake Site
Bridgeton, Missouri
MDNR ESP File No. LU3874

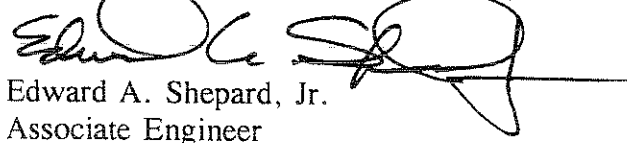
Dear Mr. Bellamy:

Enclosed is a copy of the Free Product Recovery Report for April 1995. This report, prepared on behalf of Maryon Industries, Inc., provides a summary of the product recovery activities conducted during the month of April in 1995.

Please contact the undersigned at 314-349-8399 to discuss any comments you may have. We look forward to hearing from you regarding this site.

Sincerely,

SCHREIBER, GRANA & YONLEY, INC.


Edward A. Shepard, Jr.
Associate Engineer

EAS/cef/ccp

Encl.

cc: Vince Jones - Maryon Industries, Inc.
William Whitaker - Westlake Companies

MHI02\APR95.RPT



**FREE PRODUCT RECOVERY REPORT
APRIL 1995**

**MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI**

MDNR ESP FILE NO. LU3874

June 6, 1995

PREPARED FOR:

**MR. DAVE BELLAMY
MISSOURI DEPARTMENT OF NATURAL RESOURCES
LEAKING UNDERGROUND STORAGE TANK UNIT
P.O. BOX 176
JEFFERSON CITY, MISSOURI 65102**

PREPARED BY:

**SCHREIBER, GRANA & YONLEY, INC.
271 WOLFNER DRIVE
ST. LOUIS, MISSOURI 63026**

1.0 INTRODUCTION

At the request of Maryon Industries, Inc., Schreiber, Grana & Yonley, Inc. has initiated free product recovery for the Maryon Industries, Inc. facility (Westlake Asphalt Plant) located at the Westlake Quarry & Material Company facility in Bridgeton, Missouri. The product recovery is associated with a former 10,000-gallon diesel underground storage tank (UST).

During previous Subsurface Environmental Site Investigation activities, five (5) groundwater monitoring wells were advanced and installed on the site near the former UST. These monitoring wells were designated MW-1A through MW-5A. Monitoring well MW-1A was found to have diesel fuel in a free-phase state.

Figure 1 depicts the subject site and shows the approximate locations of the former UST and the groundwater monitoring wells.

2.0 METHODS OF RECOVERY

Schreiber, Grana & Yonley, Inc. is currently utilizing a HORNER EZY SKIMMER, distributed by Horner Creative Products, Inc. to recover product. This method of product recovery consists of suspending a skimmer tube in the well. The skimmer tube has a screen at the top which allows petroleum product to flow into the skimmer, but retards water from entering. The petroleum is collected in the tube and is emptied through a drain in the bottom of the skimmer.


Maryon Industries, Inc. personnel empty the contents of the skimmer into a drum on-site on a regular basis. The amount of product in the skimmer is measured and recorded along with the date and time. In the month of April, approximately 0.085 gallons of product were recovered. In the previous month (March 1995) 0.154 gallons of product were recovered.

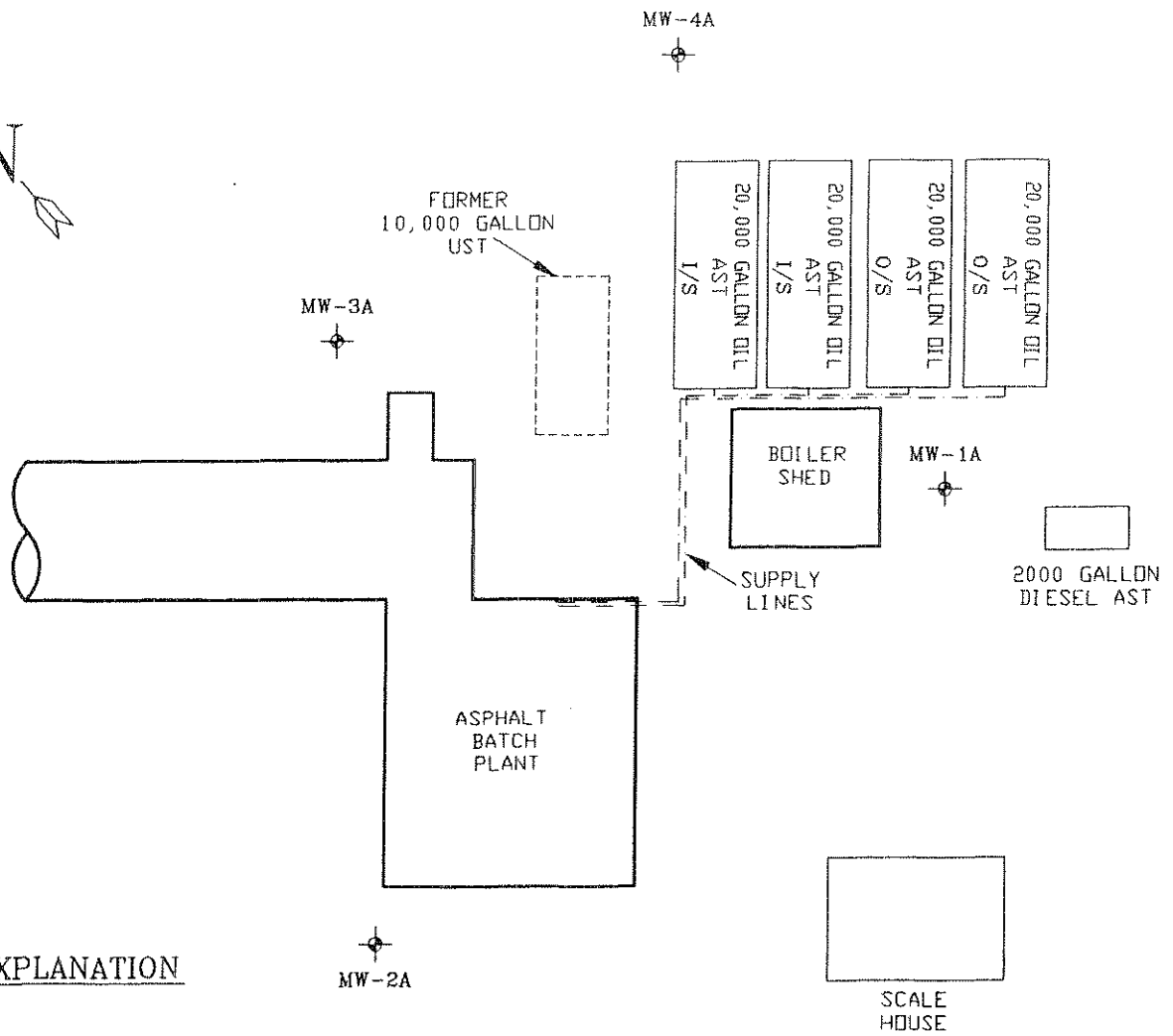
Table 1 contains a product recovery summary for the month of April 1995.

It should be noted that there is not product recovery data for every day, due to weekends and other days the plant is closed. Several days during the month of April, workers were not present due to repairs being performed on the facility.



EXPLANATION

-  MONITORING WELL
- AST ABOVEGROUND STORAGE TANK
- I/S IN SERVICE
- O/S OUT OF SERVICE
- UST UNDERGROUND STORAGE TANK



MONITORING WELL LOCATION MAP
MARYON INDUSTRIES, INC.
WESTLAKE SITE
BRIDGETON, MISSOURI

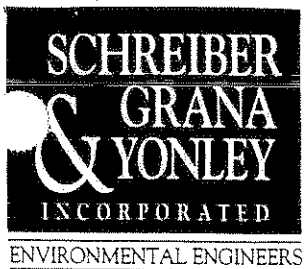
FIGURE 1
SCALE:
1"=20'
DWG. #
MII01-1

SCHREIBER
& GRANA
YONLEY
INCORPORATED
ENVIRONMENTAL ENGINEERS

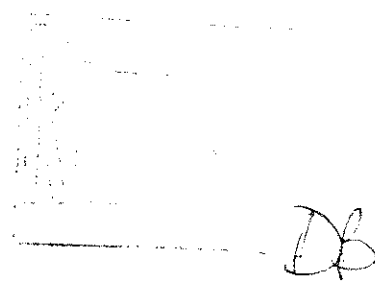
TABLE 1**MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI****FREE PRODUCT RECOVERY**

DATE	AM RECOVERY	PM RECOVERY	DAILY TOTAL
04/03/95	0.020	--	0.020
04/05/95	0.005	--	0.005
04/07/95	--	0.011	0.011
04/10/95	0.007	--	0.007
04/14/95	--	0.007	0.007
04/21/95	0.015	--	0.015
04/28/95	0.020	--	0.020
		APRIL TOTAL	0.085

NOTES: Measurements in gallons
-- denotes recovery not performed



271 Wolfner Drive • Saint Louis, Missouri 63026
314/349-8399 • Fax 314/349-8384



June 7, 1995

Mr. Dave Bellamy
Missouri Department of Natural Resources
Leaking Underground Storage Tank Unit
P.O. Box 176
Jefferson City, Missouri 65102

RE: Maryon Industries, Inc.
Westlake Site
Bridgeton, Missouri
MDNR ESP File No. LU3874

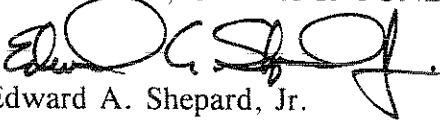
Dear Mr. Bellamy:

Enclosed is a copy of the Free Product Recovery Report for May 1995. This report, prepared on behalf of Maryon Industries, Inc., provides a summary of the product recovery activities conducted during the month of May in 1995.

Please contact the undersigned at 314-349-8399 to discuss any comments you may have. We look forward to hearing from you regarding this site.

Sincerely,

SCHREIBER, GRANA & YONLEY, INC.


Edward A. Shepard, Jr.
Associate Engineer

EAS/cef/ccp

Encl.

cc: Vince Jones - Maryon Industries, Inc.
William Whitaker - Westlake Companies

MP02\MAY95.RPT



**FREE PRODUCT RECOVERY REPORT
MAY 1995**

**MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI**

MDNR ESP FILE NO. LU3874

June 7, 1995

PREPARED FOR:

**MR. DAVE BELLAMY
MISSOURI DEPARTMENT OF NATURAL RESOURCES
LEAKING UNDERGROUND STORAGE TANK UNIT
P.O. BOX 176
JEFFERSON CITY, MISSOURI 65102**

PREPARED BY:

**SCHREIBER, GRANA & YONLEY, INC.
271 WOLFNER DRIVE
ST. LOUIS, MISSOURI 63026**



1.0 INTRODUCTION

At the request of Maryon Industries, Inc., Schreiber, Grana & Yonley, Inc. has initiated free product recovery for the Maryon Industries, Inc. facility (Westlake Asphalt Plant) located at the Westlake Quarry & Material Company facility in Bridgeton, Missouri. The product recovery is associated with a former 10,000-gallon diesel underground storage tank (UST).

During previous Subsurface Environmental Site Investigation activities, five (5) groundwater monitoring wells were advanced and installed on the site near the former UST. These monitoring wells were designated MW-1A through MW-5A. Monitoring well MW-1A was found to have diesel fuel in a free-phase state.

Figure 1 depicts the subject site and shows the approximate locations of the former UST and the groundwater monitoring wells.

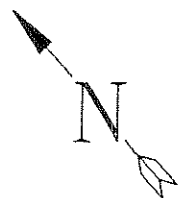
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Maryon Industries, Inc. personnel empty the contents of the skimmer into a drum located on-site on a regular basis. The amount of product in the skimmer is measured and recorded along with the date and time. In the month of May, approximately 0.302 gallons of product were recovered. In the previous month (April 1995), 0.085 gallons of product were recovered.

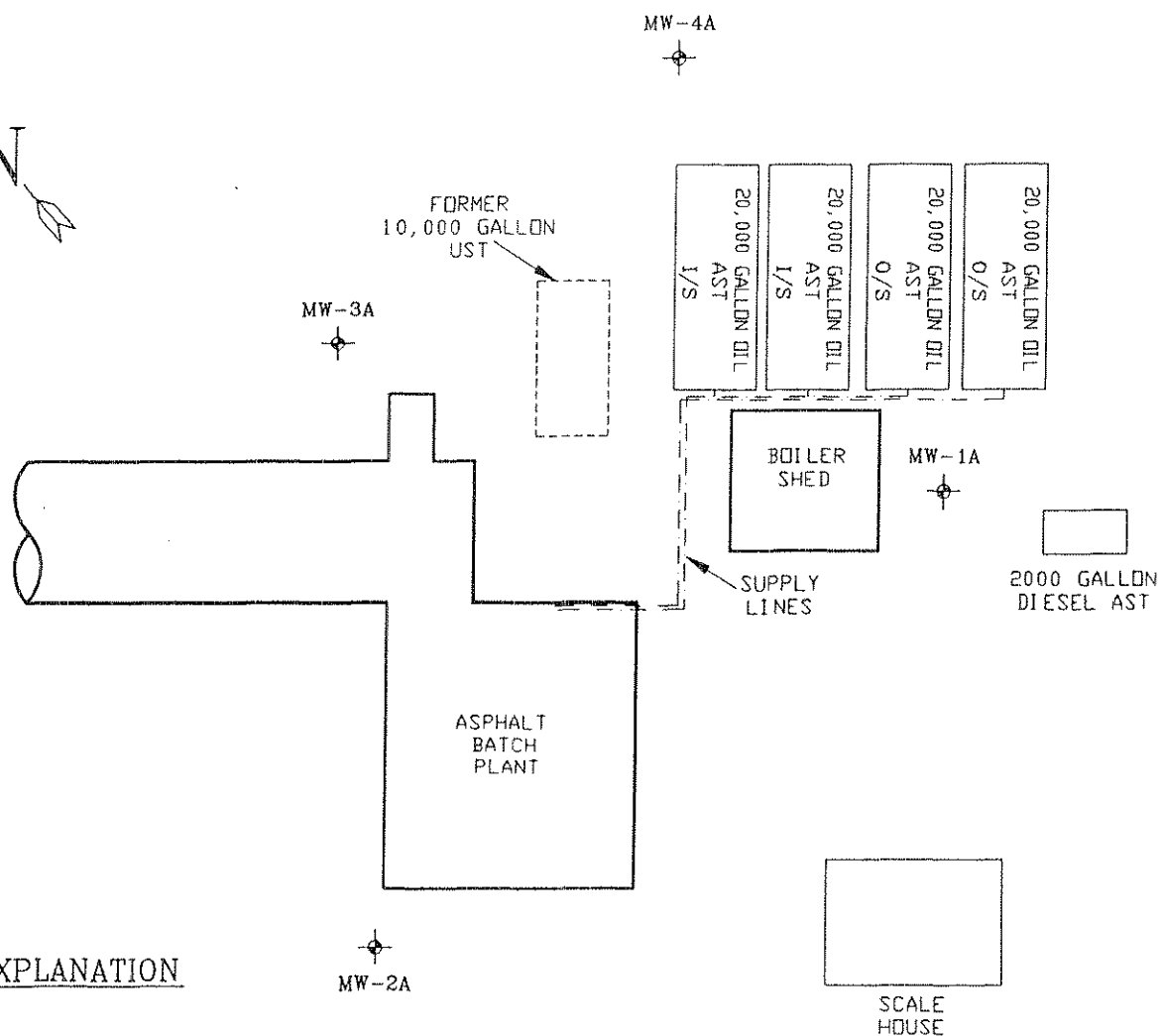
Table 1 contains a product recovery summary for the month of May 1995.

It should be noted that there is not product recovery data for every day, due to weekends and other days the plant is closed. Several days during the month of May, workers were not present due to repairs being performed on the facility.



EXPLANATION

- ⊕ MONITORING WELL
AST ABOVEGROUND STORAGE TANK
I/S IN SERVICE
O/S OUT OF SERVICE
UST UNDERGROUND STORAGE TANK



MONITORING WELL LOCATION MAP

MARYON INDUSTRIES, INC.
WESTLAKE SITE
BRIDGETON, MISSOURI

FIGURE 1

SCALE:
1"=20'

DWG. #
MII01-1

SCHREIBER
& GRANA
YONLEY
INCORPORATED
ENVIRONMENTAL ENGINEERS

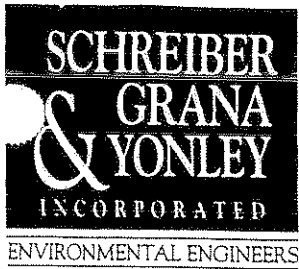
TABLE 1

**MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI**

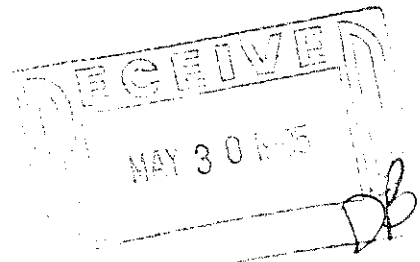
FREE PRODUCT RECOVERY

DATE	AM RECOVERY	PM RECOVERY	DAILY TOTAL
05/05/95	0.060	--	0.060
05/12/95	0.042	--	0.042
05/19/95	--	0.090	0.090
05/26/95	0.080	--	0.080
05/30/95	--	0.030	0.030
		MAY TOTAL	0.302

NOTES: Measurements in gallons
-- denotes recovery not performed



271 Wolfner Drive • Saint Louis, Missouri 63026
314/349-8399 • Fax 314/349-8384



May 1, 1995

Mr. Dave Bellamy
Missouri Department of Natural Resources
Leaking Underground Storage Tank Unit
P.O. Box 176
Jefferson City, Missouri 65102

RE: Maryon Industries, Inc.
Westlake Site
Bridgeton, Missouri
MDNR ESP File No. LU3874

Dear Mr. Bellamy:

Enclosed is a copy of the Free Product Recovery Report for March 1995. This report, prepared on behalf of Maryon Industries, Inc., provides a summary of the product recovery activities conducted during the month of March in 1995.

Please contact the undersigned at 314-349-8399 to discuss any comments you may have. We look forward to hearing from you regarding this site.

Sincerely,

SCHREIBER, GRANA & YONLEY, INC.


Edward A. Shepard, Jr.
Associate Engineer

EAS/cef/ccp

Encl.

cc: Vince Jones - Maryon Industries, Inc.
William Whitaker - Westlake Companies

X:\MII02\MII02FP2.RPT



DEC 31 1994
MAY 30 1995

**FREE PRODUCT RECOVERY REPORT
MARCH 1995**

**MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI**

MDNR ESP FILE NO. LU3874

May 1, 1995

PREPARED FOR:

**MR. DAVE BELLAMY
MISSOURI DEPARTMENT OF NATURAL RESOURCES
LEAKING UNDERGROUND STORAGE TANK UNIT
P.O. BOX 176
JEFFERSON CITY, MISSOURI 65102**

PREPARED BY:

**SCHREIBER, GRANA & YONLEY, INC.
271 WOLFNER DRIVE
ST. LOUIS, MISSOURI 63026**

1.0 INTRODUCTION

At the request of Maryon Industries, Inc., Schreiber, Grana & Yonley, Inc. has initiated free product recovery for the Maryon Industries, Inc. facility (Westlake Asphalt Plant) located at the Westlake Quarry & Material Company facility in Bridgeton, Missouri. The product recovery is associated with a former 10,000-gallon diesel underground storage tank (UST).

During previous Subsurface Environmental Site Investigation activities, five (5) groundwater monitoring wells were advanced and installed on the site near the former UST. These monitoring wells were designated MW-1A through MW-5A. Monitoring well MW-1A was found to have diesel fuel in a free-phase state.

Figure 1 depicts the subject site and shows the approximate locations of the former UST and the groundwater monitoring wells.

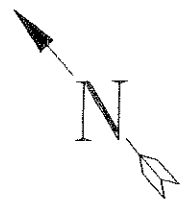
2.0 METHODS OF RECOVERY

Schreiber, Grana & Yonley, Inc. is currently utilizing a HORNER EZY SKIMMER, distributed by Horner Creative Products, Inc. to recover product. This method of product recovery consists of suspending a skimmer tube in the well. The skimmer tube has a screen at the top which allows petroleum product to flow into the skimmer, but retards water from entering. The petroleum is collected in the tube and is emptied through a drain in the bottom of the skimmer.


Maryon Industries, Inc. personnel empty the contents of the skimmer into a drum on-site on a regular basis. The amount of product in the skimmer is measured and recorded along with the date and time. In the month of March, approximately 0.154 gallons of product were recovered. In the previous month (February 1995) 0.550 gallons of product were recovered.

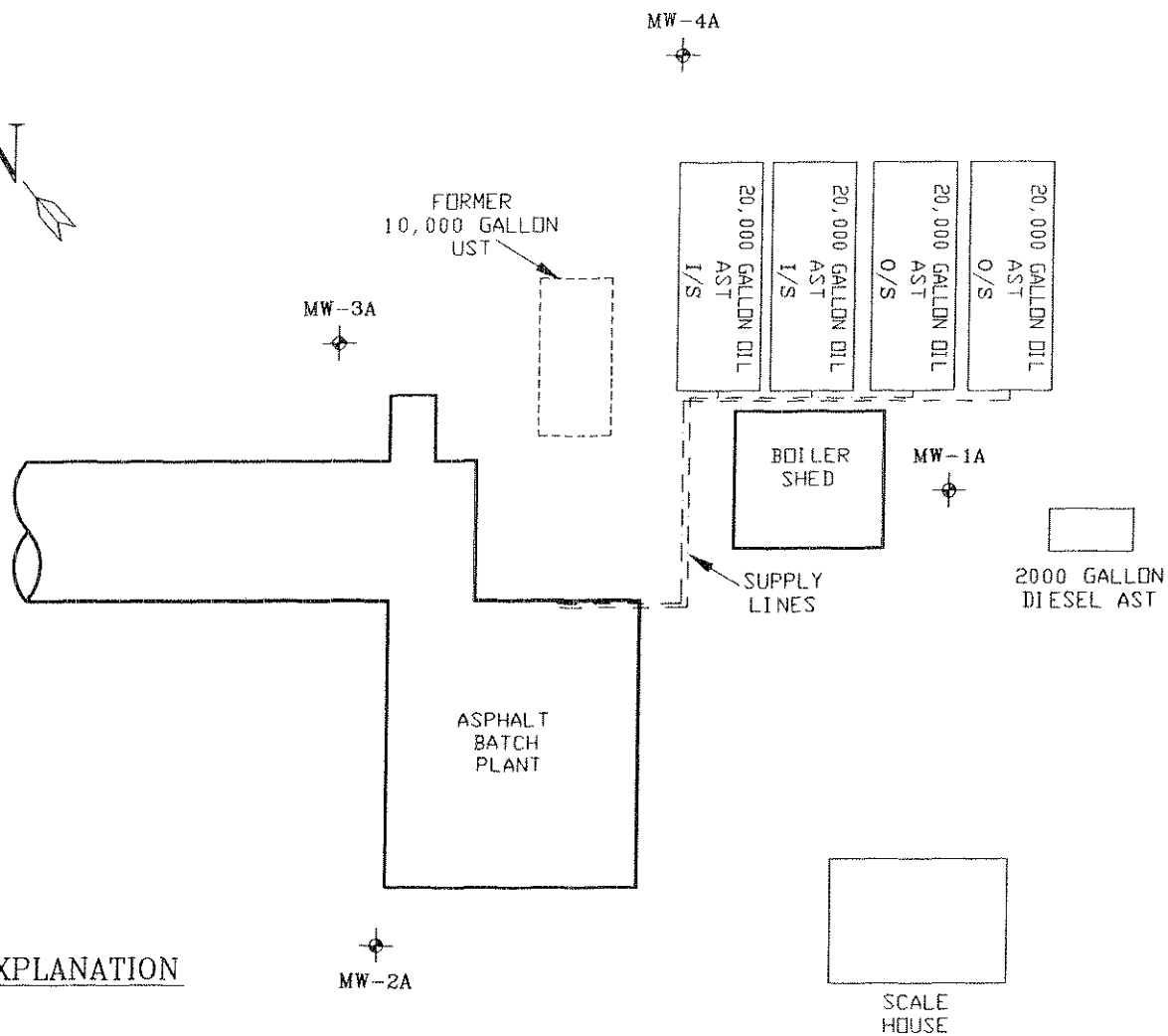
Table 1 contains a product recovery summary for the month of March 1995.

It should be noted that there is not product recovery data for every day, due to weekends and other days the plant is closed. Several days during the month of March, workers were not present due to repairs being performed on the facility.



EXPLANATION

-  MONITORING WELL
- AST ABOVEGROUND STORAGE TANK
- I/S IN SERVICE
- O/S OUT OF SERVICE
- UST UNDERGROUND STORAGE TANK



MONITORING WELL LOCATION MAP

MARYON INDUSTRIES, INC.
WESTLAKE SITE
BRIDGETON, MISSOURI

FIGURE 1

SCALE:
1"=20'

DWG. #
MII01-1

SCHREIBER
& GRANA
YONLEY
INCORPORATED
ENVIRONMENTAL ENGINEERS

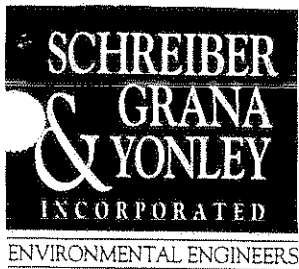
TABLE 1

**MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI**

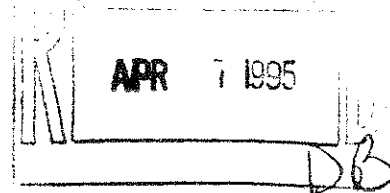
FREE PRODUCT RECOVERY

DATE	AM RECOVERY	PM RECOVERY	DAILY TOTAL
2/28/95	0.010	-----	0.010
3/13/95	0.047	0.002	0.049
3/14/95	-----	0.013	0.013
3/17/95	-----	0.035	0.035
3/20/95	0.025	-----	0.025
3/21/95	-----	0.007	0.007
3/24/95	0.008	-----	0.008
3/27/95	0.007	-----	0.007
		MARCH TOTAL	0.154

NOTES: Measurements in gallons
----- denotes recovery not performed



271 Wolfner Drive • Saint Louis, Missouri 63026
314/349-8399 • Fax 314/349-8384



March 21, 1995

Mr. Dave Bellamy
Missouri Department of Natural Resources
Leaking Underground Storage Tank Unit
P.O. Box 176
Jefferson City, Missouri 65102

RE: Maryon Industries, Inc.
Westlake Site
Bridgeton, Missouri
MDNR ESP File No. LU3874

Dear Mr. Bellamy:

Enclosed is a copy of the Free Product Recovery Report for February 1995. This report, prepared on behalf of Maryon Industries, Inc., provides a summary of the product recovery activities conducted during the month of February in 1995.

Please contact the undersigned at 314-349-8399 to discuss any comments you may have. We look forward to hearing from you regarding this site.

Sincerely,

SCHREIBER, GRANA & YONLEY, INC.

A handwritten signature in dark ink, appearing to read 'Edward A. Shepard, Jr.'.

Edward A. Shepard, Jr.
Associate Engineer

EAS/cef/ccp

Encl.



**FREE PRODUCT RECOVERY REPORT
FEBRUARY 1995**

**MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI**

MDNR ESP FILE NO. LU3874

March 21, 1995

PREPARED FOR:

**MR. DAVE BELLAMY
MISSOURI DEPARTMENT OF NATURAL RESOURCES
LEAKING UNDERGROUND STORAGE TANK UNIT
P.O. BOX 176
JEFFERSON CITY, MISSOURI 65102**

PREPARED BY:

**SCHREIBER, GRANA & YONLEY, INC.
271 WOLFNER DRIVE
ST. LOUIS, MISSOURI 63026**

1.0 INTRODUCTION

At the request of Maryon Industries, Inc., Schreiber, Grana & Yonley, Inc. has initiated free product recovery for the Maryon Industries, Inc. facility (Westlake Asphalt Plant) located at the Westlake Quarry & Material Company facility in Bridgeton, Missouri. The product recovery is associated with a former 10,000-gallon diesel underground storage tank (UST).

During a previous Subsurface Environmental Site Investigation, four (4) groundwater monitoring wells were advanced and installed on the site near the former UST. These monitoring wells were designated MW-1A through MW-4A. Monitoring well MW-1A was found to have diesel fuel in a free-phase state.

Figure 1 depicts the subject site and shows the approximate locations of the former UST and the groundwater monitoring wells.

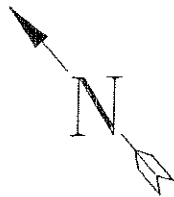
2.0 METHODS OF RECOVERY

Schreiber, Grana & Yonley, Inc. is currently utilizing a HORNER EZY SKIMMER, distributed by Horner Creative Products, Inc. to recover product. This method of product recovery consists of suspending a skimmer tube in the well. The skimmer tube has a screen at the top which allows petroleum product to flow into the skimmer, but retards water from entering. The petroleum is collected in the tube and is emptied through a drain in the bottom of the skimmer.

Maryon Industries, Inc. personnel empty the contents of the skimmer into a drum on-site on a regular basis. The amount of product in the skimmer is measured and recorded along with the date and time. In the month of February, approximately 0.550 gallons of product were recovered. In the previous month (January 1995) 1.037 gallons of product were recovered.

Table 1 contains a product recovery summary for the month of February 1995.

It should be noted that there is not product recovery data for every day, due to weekends and other days the plant is closed.

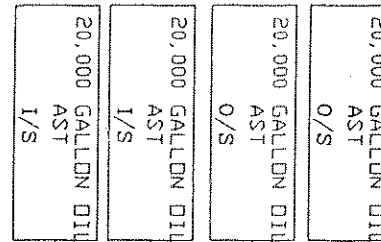


MW-4A



FORMER
10,000 GALLON
UST

MW-3A



BOILER
SHED

MW-1A



SUPPLY
LINES

2000 GALLON
DIESEL AST

ASPHALT
BATCH
PLANT

MW-2A



SCALE
HOUSE

EXPLANATION



MONITORING WELL

AST ABOVEGROUND STORAGE TANK

I/S IN SERVICE

O/S OUT OF SERVICE

UST UNDERGROUND STORAGE TANK

MONITORING WELL LOCATION MAP

MARYON INDUSTRIES, INC.
WESTLAKE SITE
BRIDGETON, MISSOURI

FIGURE 1

SCALE:
1"=20'

DWG.#
MII01-1

SCHREIBER
& GRANA
YONLEY
INCORPORATED
ENVIRONMENTAL ENGINEERS

TABLE 1

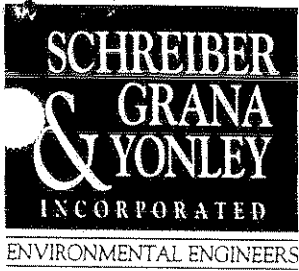
**MARYON INDUSTRIES, INC.
WESTLAKE ASPHALT PLANT
BRIDGETON, MISSOURI**

FREE PRODUCT RECOVERY

DATE	AM RECOVERY	PM RECOVERY	DAILY TOTAL
2/1/95	0.040	0.009	0.049
2/2/95	0.022	0.005	0.027
2/3/95	0.013	0.012	0.025
2/6/95	0.070	0.012	0.082
2/7/95	0.032	0.008	0.040
2/8/95	0.017	0.008	0.025
2/9/95	0.023	0.010	0.033
2/10/95	0.023	0.007	0.030
2/13/95	0.053	0.007	0.060
2/14/95	0.018	0.010	0.028
2/15/95	0.016	-----	0.016
2/16/95	0.010	0.007	0.017
2/17/95	0.010	0.005	0.015
2/20/95	0.040	0.003	0.043
2/21/95	0.007	0.002	0.009
2/22/95	0.009	0.002	0.011
2/23/95	0.007	0.002	0.009
2/24/95	0.007	0.007	0.014
2/27/95	0.017	-----	0.017
		FEBRUARY TOTAL	0.550

NOTES: Measurements in gallons

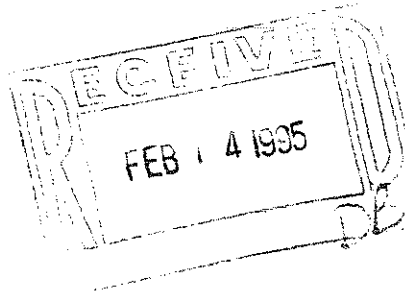
----- denotes recovery not performed



271 Wolfner Drive • Saint Louis, Missouri 63026
314/349-8399 • Fax 314/349-8384

February 7, 1995

Mr. Dave Bellamy
Missouri Department of Natural Resources
Leaking Underground Storage Tank Unit
P.O. Box 176
Jefferson City, Missouri 65102



RE: Maryon Industries, Inc.
Westlake Site
Bridgeton, Missouri
MDNR ESP File No. LU3874

Dear Mr. Bellamy:

Enclosed is a copy of the Free Product Recovery Report for January 1995. This report, prepared on behalf of Maryon Industries, Inc., provides a summary of the product recovery activities conducted during the month of January in 1995.

Please contact the undersigned at 314-349-8399 to discuss any comments you may have. We look forward to hearing from you regarding this site.

Sincerely,

SCHREIBER, GRANA & YONLEY, INC.

A handwritten signature in dark ink, appearing to read 'Edward A. Shepard, Jr.'.

Edward A. Shepard, Jr.
Associate Engineer

EAS/cef/ccp

cc: Vince Jones - Maryon Industries, Inc.
William Whitaker - Westlake Companies

Encl.

MI02\MI02FP.RPT

A SUBSIDIARY OF PERMA-FIX ENVIRONMENTAL SERVICES, INC.



**FREE PRODUCT RECOVERY REPORT
JANUARY 1995**

**MARYON INDUSTRIES, INC.
WESTLAKE SITE
BRIDGETON, MISSOURI**

MDNR ESP FILE NO. LU3874

February 7, 1995

PREPARED FOR:

**MR. DAVE BELLAMY
MISSOURI DEPARTMENT OF NATURAL RESOURCES
LEAKING UNDERGROUND STORAGE TANK UNIT
P.O. BOX 176
JEFFERSON CITY, MISSOURI 65102**

PREPARED BY:

**SCHREIBER, GRANA & YONLEY, INC.
271 WOLFNER DRIVE
ST. LOUIS, MISSOURI 63026**



1.0 INTRODUCTION

At the request of Maryon Industries, Inc., Schreiber, Grana & Yonley, Inc. has initiated free product recovery for the Maryon Industries, Inc. facility located at the Westlake Quarry & Material Company facility in Bridgeton, Missouri. The product recovery is associated with a former 10,000-gallon diesel underground storage tank (UST).

During a previous Subsurface Environmental Site Investigation, four (4) groundwater monitoring wells were advanced and installed on the site near the former UST. These monitoring wells were designated MW-1A through MW-4A. Monitoring well MW-1A was found to have diesel fuel in a free-phase state.

Figure 1 depicts the subject site and shows the approximate locations of the former UST and the groundwater monitoring wells.

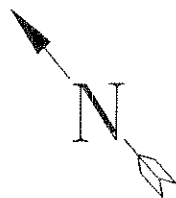
2.0 METHODS OF RECOVERY

Schreiber, Grana & Yonley, Inc. is currently utilizing a HORNER EZY SKIMMER, distributed by Horner Creative Products, Inc. to recover product. This method of product recovery consists of suspending a skimmer tube in the well. The skimmer tube has a screen at the top which allows petroleum product to flow into the skimmer, but retards water from entering. The petroleum is collected in the tube and is emptied through a drain in the bottom of the skimmer.

Maryon Industries, Inc. personnel empty the contents of the skimmer into a drum on-site on a regular basis. The amount of product in the skimmer is measured and recorded along with the date and time. In the month of January, approximately 1.037 gallons of product were recovered.

Table 1 contains a product recovery summary for the month of January 1995.

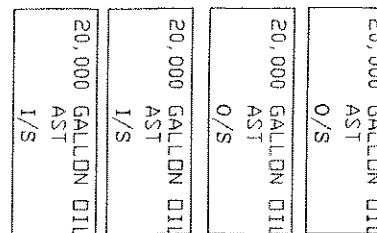
It should be noted that there is not product recovery data for every day, due to weekends and faulty recovery equipment.



MW-4A

FORMER
10,000 GALLON
UST

MW-3A



BOILER
SHED

MW-1A

SUPPLY
LINES


2000 GALLON
DIESEL AST

ASPHALT
BATCH
PLANT

MW-2A

SCALE
HOUSE

EXPLANATION

-  MONITORING WELL
- AST ABOVEGROUND STORAGE TANK
- I/S IN SERVICE
- O/S OUT OF SERVICE
- UST UNDERGROUND STORAGE TANK

MONITORING WELL LOCATION MAP

MARYON INDUSTRIES, INC.
WESTLAKE SITE
BRIDGETON, MISSOURI

FIGURE 1

SCALE:
1"=20'

DWG.#
MH01-1

SCHREIBER
& GRANA
YONLEY
INCORPORATED
ENVIRONMENTAL ENGINEERS

TABLE 1

**MARYON INDUSTRIES, INC.
WESTLAKE SITE
BRIDGETON, MISSOURI**

FREE PRODUCT RECOVERY

DATE	AM RECOVERY	PM RECOVERY	DAILY TOTAL
1/5/95	0.097	0.072	0.169
1/9/95	0.097	0.008	0.105
1/10/95	0.023	0.011	0.034
1/11/95	0.018	0.005	0.023
1/12/95	0.005	0.003	0.008
1/13/95	0.010	0.003	0.013
1/16/95	0.097	0.050	0.147
1/17/95	0.049	0.050	0.099
1/18/95	0.040	-----	0.040
1/20/95	0.090	0.090	0.180
1/26/95	-----	0.090	0.090
1/27/95	-----	0.013	0.013
1/30/95	0.073	0.007	0.080
1/31/95	0.023	0.013	0.036
		JANUARY TOTAL	1.037

NOTES: Measurements in gallons
----- denotes recovery not performed



STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

Mel Carnahan, Governor • David A. Shorr, Director

DIVISION OF ENVIRONMENTAL QUALITY
P.O. Box 176 Jefferson City, MO 65102-0176

February 7, 1995

ESP FILE NO.
LU#3874

Mr. Vince Jones
Maryon Industries, Inc.
150 Weldon Parkway
Maryland Heights, MO 63043

Dear Mr. Jones:

RE: Westlake, 13570 St. Charles Rock Road, Bridgeton, MO

The Leaking Underground Storage Tank (LUST) Unit of the Missouri Department of Natural Resources (MDNR) has received and reviewed the Schreiber, Grana, & Yonley Investigative Summary dated January 11, 1995, for the above referenced site.

The LUST Unit approves of the additional monitoring well to determine the overall extent of the plume. However, please understand that one additional monitoring well will not satisfy MDNR's overall site characterization of the soil and water requirements. Once your consultant has determined the outer most downgradient boundary, the LUST Unit will require Maryon Industries, Inc. to fully define, both vertically and horizontally, the extent of the contamination. For more information pertaining to site characterization requirements, you may want to review MDNR's Site Characterization Guidance Document dated February 1991. Please see the enclosed order form.

Additional installation of the additional monitoring well may require the review for and issuance of appropriate permits. Please submit a status report after implementation.

Mr. Vince Jones
February 7, 1995
Page Two

If you have any questions, please do not hesitate to contact Dave Bellamy at the Leaking Underground Storage Tank Unit at 314/526-3379 or 314/526-3352.

Very truly yours,

DIVISION OF ENVIRONMENTAL QUALITY



Alan Reinkemeyer
Supervisor
Leaking Underground Storage Tank Unit
Environmental Services Program

AR:jlh

Enclosure

c: Keith Knelle, Environmental Specialist, St. Louis Regional Office
Mr. Ed Shepard, Schreiber, Grana, & Yonley, Inc., 271 Wolfner Drive,
St. Louis, MO 63026

ADR

ST. LOUIS

P.O. Box 182

St. Charles, MO 63302

314-947 9963

Department of Natural Resources
ESP Division- D. Bellamy
P.O. BOX 176
Jefferson City, Mo. 65102

January 13, 1995
RE: LU# 3874 / West Lake Q & M Company

Mr. Bellamy

As requested in your letter of August 22, 1994, we are providing the analytical results of samples from Well # 1 and # 2. The results provided by CASCHEM LABORATORIES, INC., indicate the total petroleum hydrocarbons are below action level for the periods identified.

<u>Period</u>	<u>Date</u>	<u>Well # 1</u>	<u>Well # 2</u>
3rd Quarter 1994	08/17/94	1.1 ppm	5.3 ppm
4th Quarter 1994	10/11/94	< 1 ppm	<1 ppm
1st Quarter 1995	01/13/95	<1 ppm	<1 ppm

Parts per Million (ppm) = Milligrams per Liter (mg/l)

It is my understanding, your department has agreed to allow closure of these wells, provided the analytical results for the fourth monitoring period, are below 10 parts per million. Subject to the test results, we will anticipate closure of the three wells currently under our control (1, 2 & 3).

Your written response is requested for our files as confirmation of this agreement. If you should require additional information, please contact my office or Mr. Bill Whitaker, at your earliest convenience.

Respectfully,


Patrick Reeves

Encl. 6-Test Results

CASCHEM LABORATORIES, INC.
1712 11TH STREET, N.E.
CANTON, OHIO 44705
Phone (216) 588-TEST FAX:(216) 588-8412

08/17/94

Laboratory Analysis Report

PAT REEVES
ADR/ST. LOUIS
566 NORTH FIRST CAPITAL
ST. CHARLES MO 63302-0182

Client ID: 1039
Sample ID: BRIDGETON WESTLAKE
Sample Matrix: WATER
Sample Description:
WELL #1

Comment:

Purchase Order No.:

Date Sampled: 8-12-94
Time Sampled: 11:40

Date Received: 08/13/94 Time Received: 11:00

Discrepancies or Deviations:

Lab Number	Test Description	Result	Unit	LOD	TEST DATE
1081138	T.P.H. (418.1)	1.1	mg/l	1.0 mg/l	08/17/94

DATE REPORTED: 08/17/94

TIME REPORTED: 14:07:13

☒ fax ☒ mail ☐ phone

REPORTED BY:

Analysts

QA/QC Manager

Results relate only to items tested. Samples tested as received. This report may not be reproduced except in full without the approval of CasChem Laboratories, Inc.

CASCHEM LABORATORIES, INC.
1712 11TH STREET, N.E.
CANTON, OHIO 44705
Phone (216) 588-TEST FAX:(216) 588-8412

08/17/94

Laboratory Analysis Report

PAT REEVES
ADR/ST.LOUIS
566 NORTH FIRST CAPITAL
ST.CHARLES MO 63302-0182

Client ID: 1039
Sample ID:BRIDGETON WESTLAKE
Sample Matrix: WATER
Sample Description:
WELL #2

Comment:

Purchase Order No.:

Date Sampled:8-12-94
Time Sampled:10:30

Date Received:08/13/94 Time Received:11:00

Discrepancies or Deviations:

Lab Number	Test Description	Result	Unit	LOD	TEST DATE
4081139					
	T.P.H. (418.1)	5.3	mg/l	1.0 mg/l	08/17/94


DATE REPORTED:08/17/94

TIME REPORTED:14:07:31

☒ fax ☒ mail ☐ phone

REPORTED BY: _____

Analysts

 QA/QC Manager

Results relate only to items tested. Samples tested as received. This report may not be reproduced except in full without the approval of CasChem Laboratories, Inc.

CASCHEM LABORATORIES, INC.
1712 IRA TURPIN WAY NE
CANTON, OHIO 44705-1415
Phone (216) 588-TEST FAX:(216) 588-8412

10/11/94

Laboratory Analysis Report

PAT REEVES
ADR/ST.LOUIS
566 NORTH FIRST CAPITAL
ST.CHARLES MO 63302-0182

Client ID: 1039
Sample ID:BRIDGETON WESTLAKE
Sample Matrix: WATER
Sample Description:
WELL#1 GRAB

Comment:

Purchase Order No.:

Date Sampled:10-5-94
Time Sampled:16:30

Date Received:10/06/94 Time Received:09:20

Discrepancies or Deviations:

Lab Number	Test Description	Result	Unit	LOD	TEST DATE
9410154					
	T.P.H. (418.1)	<1	mg/l	1.0 mg/l	10/07/94

DATE REPORTED:10/11/94

TIME REPORTED: 9:25:01

☒ fax ☒ mail ☐ phone

REPORTED BY:

Analysts

QA/QC Manager

Results relate only to items tested. Samples tested as received. This report may not be reproduced except in full without the approval of CasChem Laboratories, Inc.

CASCHEM LABORATORIES, INC.
1712 IRA TURPIN WAY NE
CANTON, OHIO 44705-1415
Phone (216) 588-TEST FAX:(216) 588-8412

10/11/94

Laboratory Analysis Report

PAT REEVES
ADR/ST.LOUIS
566 NORTH FIRST CAPITAL
ST.CHARLES MO 63302-0182

Client ID: 1039
Sample ID:BRIDGETON WESTLAKE
Sample Matrix: WATER
Sample Description:
WELL #2 GRAB

Comment:

Purchase Order No.:

Date Sampled:10-5-94
Time Sampled:11:56

Date Received:10/06/94 Time Received:09:20

Discrepancies or Deviations:

Lab Number	Test Description	Result	Unit	LOD	TEST DATE
9410155					
	T.P.H. (418.1)	<1	mg/l	1.0 mg/l	10/07/94

DATE REPORTED:10/11/94

TIME REPORTED: 9:25:10

☒ fax

☐ mail

☐ phone

REPORTED BY:

Analysts

QA/QC Manager

Results relate only to items tested. Samples tested as received. This report may not be reproduced except in full without the approval of CasChem Laboratories, Inc.

CASCHEM LABORATORIES, INC.
1712 IRA TURPIN WAY NE
CANTON, OHIO 44705-1415
Phone (216) 588-TEST FAX:(216) 588-8412

01/13/95

Laboratory Analysis Report

PAT REEVES
ADR/ST.LOUIS
566 NORTH FIRST CAPITAL
ST.CHARLES MO 63302-0182

Client ID: 1039
Sample ID: WEST LAKE-BRIDGETON
Sample Matrix: WATER
Sample Description:
GRAB WELL #1

Comment:

Purchase Order No.:

Date Sampled: 01-08-95
Time Sampled: 11:30

Date Received: 01/10/95 Time Received: 10:15

Discrepancies or Deviations:

Lab Number	Test Description	Result	Unit	LOD	TEST DATE
9501237	T.P.H. (418.1)	<1	mg/l	1.0 mg/l	01/11/95

DATE REPORTED: 01/13/95

TIME REPORTED: 16:05:12

fax mail phone

REPORTED BY:

Analysts

QA/QC Manager

Results relate only to items tested. Samples tested as received. This report may not be reproduced except in full without the approval of CasChem Laboratories, Inc.

CASCHEM LABORATORIES, INC.
1712 IRA TURPIN WAY NE
CANTON, OHIO 44705-1415
Phone (216) 588-TEST FAX:(216) 588-8412

01/13/95

Laboratory Analysis Report

PAT REEVES
ADR/ST. LOUIS
566 NORTH FIRST CAPITAL
ST. CHARLES MO 63302-0182

Client ID: 1039
Sample ID: WEST LAKE-BRIDGETON
Sample Matrix: WATER
Sample Description:
GRAB WELL #2

Comment:

Purchase Order No.:

Date Sampled: 01-08-95
Time Sampled: 12:15

Date Received: 01/10/95 Time Received: 10:15

Discrepancies or Deviations:

Lab Number	Test Description	Result	Unit	LOD	TEST DATE
9501238					
	T.P.H. (418.1)	<1	mg/l	1.0 mg/l	01/11/95

DATE REPORTED: 01/13/95

TIME REPORTED: 16:05:22

fax mail phone

REPORTED BY: Don L. Black Analysts

Paul J. L. QA/QC Manager

Results relate only to items tested. Samples tested as received. This report may not be reproduced except in full without the approval of CasChem Laboratories, Inc.

Attachment 4

Portion of June 26, 1990 Phase III Investigation
Report Ford Financial Services

PHASE II INVESTIGATION FINAL REPORT

U.S. REAL ESTATE DIVISION
FORD FINANCIAL SERVICES
EARTH CITY, MISSOURI

 **DAMES & MOORE**

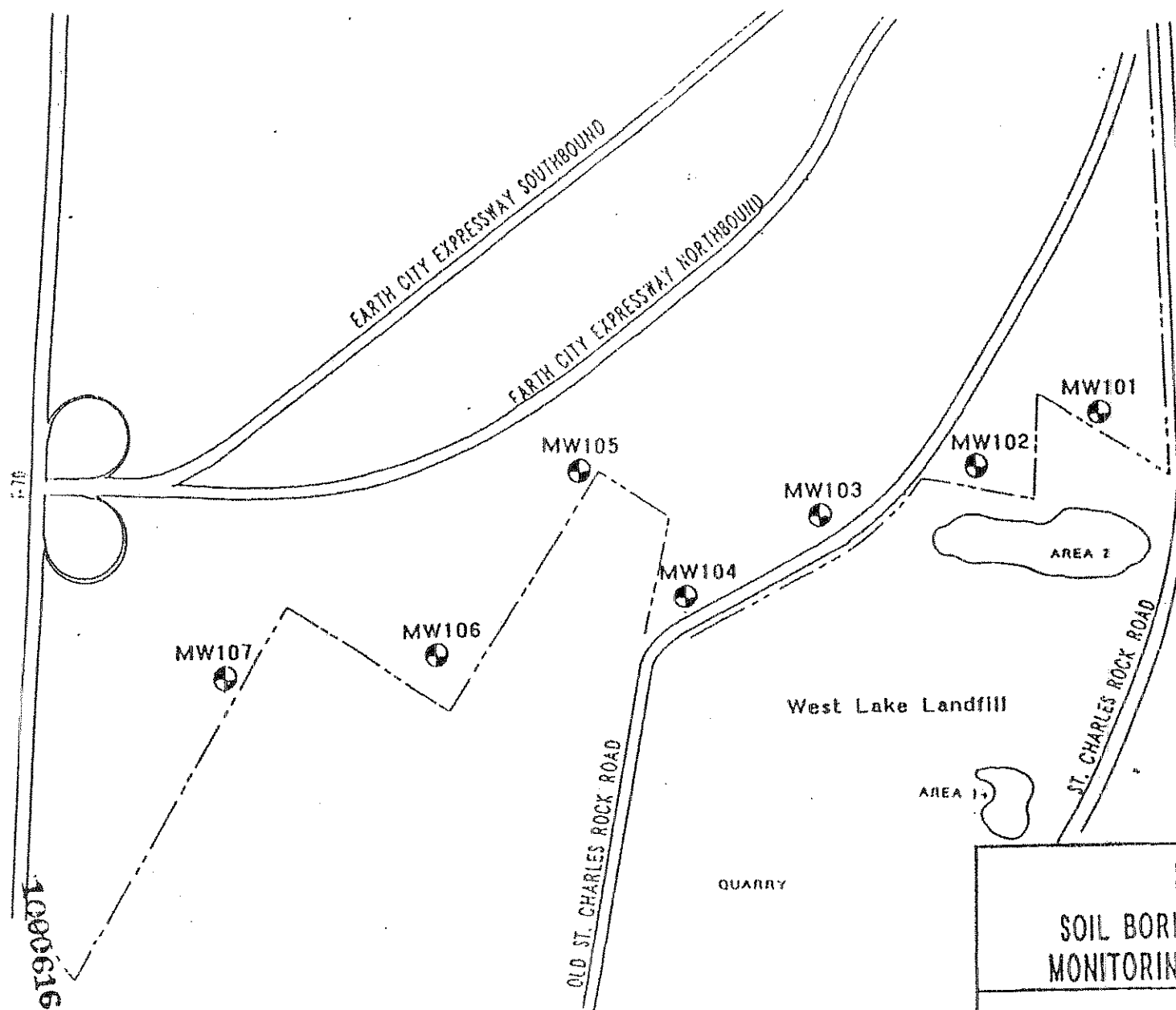
D&M Job No. 19943-002-045
June 26, 1990

WLQ 0023
Exhibit 20-A

Table 10C
Radiologic Data Summary
Water Samples

Parameter	Units	MW107-U	MW107-F	MW108-U	MW108-F	MW109-U	MW109-F
Type		Investigative	Investigative	dupl. MW102-U	dupl. MW102-F	split MW102-U	split MW102-F
		Unfiltered	Filtered	Unfiltered	Filtered	Unfiltered	Filtered
Laboratory		ITC	ITC	ITC	ITC	CEP	CEP
Gross Alpha	pCi/l	202 +/- 36	< 10	< 7.5	< 10.6	< 2.0	< 2.0
Gross Beta	pCi/l	17.7 +/- 11.0	< 9.3	< 10.3	< 8.4	7 +/- 3	< 3
Uranium-234	pCi/l	< 1.0	1.6 +/- 0.4	2.2 +/- 0.5	3.6 +/- 0.6	< 0.6	< 0.6
Uranium 235/236	pCi/l	< 1.0	< 1.0	< 1.0	< 1.0	< 0.6	< 0.6
Uranium 238	pCi/l	< 1.0	1.2 +/- 0.3	1.7 +/- 0.4	2.9 +/- 0.5	< 0.6	< 0.6
Thorium 230	pCi/l	< 1.0	< 1.0	1.6 +/- 0.6	< 1.0	< 0.6	< 0.6
Thorium-232	pCi/l	< 1.0	< 1.0	< 1.0	< 1.0	< 0.6	< 0.6
Potassium-40	pCi/l	<180	<180	<190	<150	< 5	< 5
Cesium-137	pCi/l	< 20	< 20	< 20	< 20	11.0 +/- 0.8	< 2
Radium-226	pCi/l	< 1.0	< 1.0	< 1.0	< 1.0	1.5 +/- 1.0	< 0.6
Radium-228	pCi/l	< 3.0	< 3.0	< 3.0	< 3.0	< 1	< 1

10006182



● SOIL BORING/ MONITORING WELL LOCATIONS

FIGURE 6
SOIL BORING/ GROUNDWATER
MONITORING WELL LOCATIONS

U.S. REAL ESTATE
EARTH CITY, MISSOURI

Job No. 19943-002

Dames & Moore

MONITOR WELL INFORMATION SHEET

GROUND SURFACE ELEVATION _____

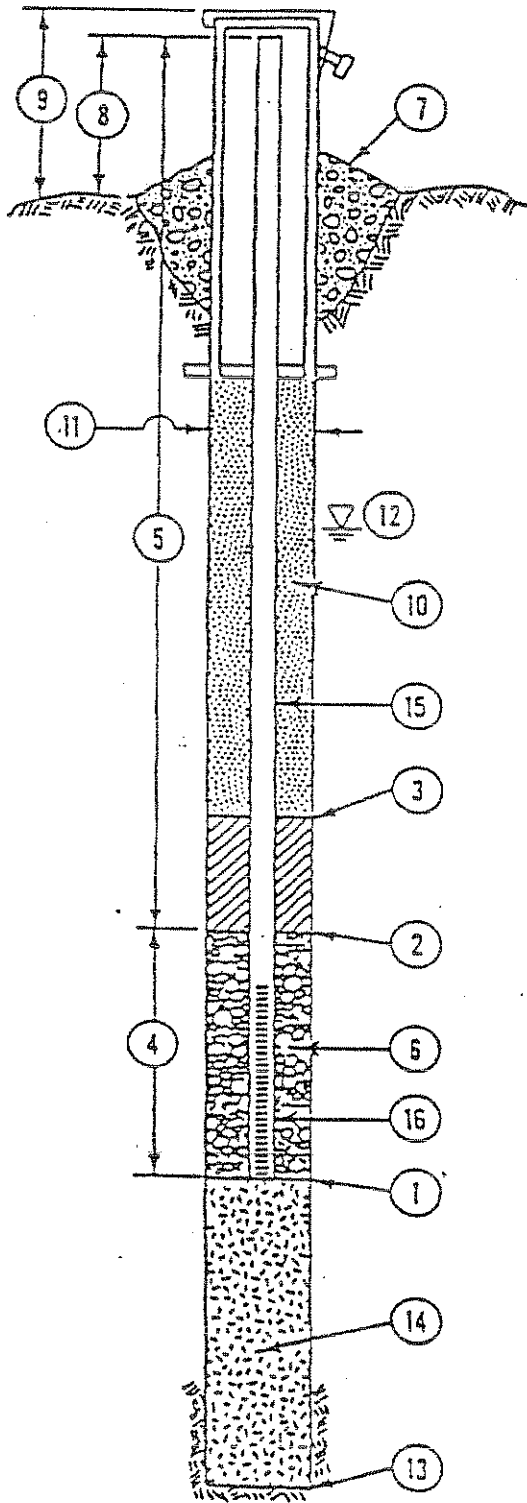
TOP OF WELL CASING ELEVATION 449.25

JOB NUMBER 19943-002

BORING NUMBER MW-107

DATE 4-12-90

LOCATION East City MO



1 DEPTH TO BOTTOM OF WELL POINT OR SLOTTED PIPE 19 FEET.*

2 DEPTH TO BOTTOM OF SEAL (IF INSTALLED) 3.5 FEET.*

3 DEPTH TO TOP OF SEAL (IF INSTALLED) 2 FEET.*

4 LENGTH OF WELL SCREEN 10 FEET. SLOT SIZE 0.010

5 TOTAL LENGTH OF PIPE _____ FEET AT 2 INCH DIAMETER.

6 TYPE OF PACK AROUND WELL POINT OR SLOTTED PIPE SAND

7 CONCRETE CAP. ☒ YES ☐ NO (CIRCLE ONE)

8 HEIGHT OF WELL CASING ABOVE GROUND _____ FEET.

9 PROTECTIVE CASING? ☒ YES ☐ NO (CIRCLE ONE)
HEIGHT ABOVE GROUND _____ FEET.
LOCKING CAP? ☒ YES ☐ NO (CIRCLE ONE)

10 TYPE OF UPPER BACKFILL concrete

11 BOREHOLE DIAMETER 8 INCHES.

12 DEPTH TO GROUND WATER 5 FEET.*

13 TOTAL DEPTH OF BOREHOLE 15 FEET.*

14 TYPE OF LOWER BACKFILL N/A

15 PIPE MATERIAL PVC

16 SCREEN MATERIAL PVC

*(DEPTH FROM GROUND SURFACE)

10006366

MONITOR WELL INSTALLATION DETAILS

DATE: 8/10/90

Attachment 5

April and May 2005 PM Resources Documentation

May 16, 2005

Darleen Groner
1738 East Elm Street
Jefferson City, MO 65101

RE: Deliverables for PM Resources, Bridgeton, MO.

Dear Darleen,

As a follow-up to our meeting of April 28, 2005 and on behalf of our clients PM Resources and BP, enclosed are two copies of the following documents:

1. Selection of Chemicals of Concern in Groundwater
2. Selection of Chemicals of Concern in Soil
3. Delineation of Impacts
4. Evaluation of Plume Stability
5. Evaluation of Groundwater Use Pathway
6. Exposure Model

The conclusions and decisions made on each of the above six topics are critical as far as the future work on this project is concerned. Therefore, we request that you please review these documents. As we had discussed at the April 28, 2005 meeting, we would like to meet with you after you have had the opportunity to review these documents to discuss your comments and the path forward.

Please call us at the earliest convenience if you have any questions.

Thank you,

Atul M. Salhotra, Ph.D.
Principal Consulting Professional

Cc: William Bush
Tom Tunncliffe
John Traeger (without attachment)

PATH FORWARD

PM Resources, Inc.
13001 St. Charles Rock Road
Bridgeton, MO 63044

April 2005

Prepared for:
PM Resources, Inc.
13001 St. Charles Rock Road
Bridgeton, MO 63044

Prepared by:
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PART 2	SELECTION OF CHEMICALS OF CONCERN IN SOIL
PART 3	DELINEATION OF IMPACTS
PART 4	EVALUATION OF PLUME STABILITY
PART 5	EVALUATION OF GROUNDWATER USE PATHWAY
PART 6	EXPOSURE MODEL

SELECTION OF CHEMICALS OF CONCERN IN
GROUNDWATER
(Part 1)

PM Resources, Inc.
13001 St. Charles Rock Road
Bridgeton, MO 63044

May 2005

Prepared for:
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SELECTION OF CHEMICALS OF CONCERN IN GROUNDWATER

1.0 INVENTORY OF GROUNDWATER DATA

At the PM Resources facility, available groundwater data includes:

- (i) Thirteen monitoring wells (MW1, MW2A, and MW3 to MW13).
- (ii) Sampling frequency and sampling period for each monitoring well are:

Monitoring Wells	Number of Sampling Events	Sampling Period
MW-1	9	Feb.'99 - Jan. '05
MW-2A	11	Mar. '99 - Jan. '05
MW-3	10	Feb.'99 - Jan. '05
MW-4	9	Oct. '00 - Jan. '05
MW-5	10	Oct. '00 - Jan. '05
MW-6	9	Oct. '00 - Jan. '05
MW-7	9	Oct. '00 - Jan. '05
MW-8	9	Oct. '00 - Jan. '05
MW-9	7	Oct. '00 - Jan. '05
MW-10	9	Oct. '00 - Jan. '05
MW-11	9	Oct. '00 - Jan. '05
MW-12	9	Oct. '00 - Jan. '05
MW-13	9	Oct. '00 - Jan. '05

- (iii) Eight duplicate samples have been collected from the following monitoring wells (data shown in Table 1-1):

Monitoring Wells	Number of Duplicate Samples	Date for Duplicate Samples
MW-1	1	Oct. '00
MW-7	1	Aug. '01
MW-10	2	May '02 and Dec. '02
MW-11	4	Oct. '00, Oct. '01, Sep. '02, and Jan. '05

- (iv) There are five MDNR split samples (MW1, MW2A, MW2A Dup, MW6, and MW13) for the 1st Quarter of 2003 sampling event.
- (v) Piezometer data for six temporary piezometers (B20a, B20c, B20d, B21b, B22, and B23a) installed in February 1999 is available. These data were not

quantitatively used in this evaluation because (i) the location of the piezometers is in close proximity to monitoring wells (MW10, MW11, and MW12), and (ii) the piezometer data is more than 6 years old.

(vi) During these events, samples were analyzed for 248 chemicals including isomers in the following six chemical groups:

- 9 Metals (dissolved and total),
- 103 Volatile organic compounds,
- 74 Semi-volatile organic compounds,
- 22 Chlorinated pesticides,
- 26 Organophosphorus pesticides, and
- 14 Chlorinated herbicides.

1.1 PM Resources Duplicate Data

Table 1-1 lists the duplicate data collected by PM Resources. For ease of interpretation chemicals with detected concentrations have been highlighted in green. Following are a few pertinent observations:

- MW1 (October 2000): 1 chemical was detected in both the original and duplicate sample; the relative percent difference was 3.6%.
- MW7 (August 2001): 2 chemicals were detected in both the original and duplicate sample, the relative percent difference were 2.5% and 4.9%.
- MW10 (May 2002): 2 chemicals were detected in both the original and duplicate sample, the relative percent difference were 3.5% and 57.5%.
- MW10 (December 2002): 2 chemicals were detected in both the original and duplicate sample, the relative percent difference were 23.3% and 96.1%.
- MW11 (October 2000): 4 chemicals were detected in both the original and duplicate sample, the relative percent difference ranged from 27.3% to 111%.
- MW11 (October 2001): 7 chemicals were detected in both the original and duplicate sample, the relative percent difference ranged from 7.1% to 81.8%.
- MW11 (September 2002): 9 chemicals were detected in both the original and duplicate sample, the relative percent difference ranged from 8.1% to 55.5%.
- MW11 (January 2005): 10 chemicals were detected in both the original and duplicate sample, the relative percent difference ranged from 0% to 111%.

Note that the relative percent difference (RPD) is estimated as:

$$\text{RPD} = [(c_1 - c_2) \div 0.5 (c_1 + c_2)] \times 100$$

where: C_1 is concentration in first sample
 C_2 is concentration in second sample

Although a few duplicate samples exceeded the relative percent difference of 30% (often considered acceptable), the absolute difference in concentrations is small. Hence, the average of the duplicate samples was used.

1.2 MDNR Split Duplicate Data

Table 1-2 presents the MDNR split data and the PM Resources data. For ease of interpretation, the detected concentrations have been highlighted green. This data was previously evaluated by RAM Group, refer to the technical memorandum dated March 2, 2004 regarding March 12, 2003 MDNR split groundwater samples (*RAM Group, Inc., March 2004*).

In general, although MDNR data has lower detection limits and detected concentrations are generally higher, the overall difference is not very significant. Hence the average of the MDNR split data and the PM Resources data will be used for further analysis.

1.3 Comprehensive Groundwater Database

Using the entire groundwater data discussed above, a comprehensive groundwater database was developed with the following considerations:

Samples with duplicates in PM Resources Data and MDNR Split Data were treated as below:

- If a chemical was detected in either or both the samples, the concentrations were averaged and one-half the detection limit was used for the non-detected value;
- If a chemical was analyzed in only one sample and if detected, the detected value was used. If not detected, then conservatively its detection limit was used; and
- If the chemical was not detected in either sample, the lower of the two detection limits was used.

Metals conservatively only the total metal concentrations (as opposed to dissolved concentrations) were considered. This is conservative since total metal concentrations are typically higher than dissolved metal concentrations due to the presence of suspended materials.

Chemicals detected by both VOC and SVOC methods: There are eight chemicals that have been analyzed by both VOC and SVOC methods in the same sample: 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, hexachlorobutadiene, hexachloroethane, naphthalene, and nitrobenzene. Discussion with laboratories indicated that for these chemicals both methods are appropriate and none is superior to the other. These eight chemicals were treated as follows:

- If a chemical was detected by either or both the methods, the concentrations were averaged and one-half the detection limit was used for the non-detected value; and
- If the chemical was not detected by either method, the lower of the two detection limits was used.

2.0 PROCESS FOR SELECTION OF CHEMICALS OF CONCERN

A flowchart showing the process used for the selection of chemicals of concern in groundwater is presented in Figure 1-1. A total of 236 different chemicals were analyzed. Of these 236 chemicals, 171 chemicals were never detected and the remaining 65 chemicals were detected in at least one sample.

3.0 CONSIDERATION OF CHEMICALS DETECTED

For the 65 chemicals detected, Table 1-3 presents a comparison of the maximum detected concentrations with the lowest groundwater default target levels (DTLs) in the draft MRBCA Technical Guidance document (*MDNR, 2005*). This process is described in Section 2.2.3 beginning on page 2-3 of the guidance document (*MDNR, 2005*). This process is described in section 2.2.3 beginning of page 2-3 of the guidance document (*MDNR, 2005*). Based on this comparison the following observations were made:

- The maximum detected concentrations for 29 chemicals exceeded DTLs;
- The maximum detected concentrations for 31 chemicals did not exceed DTLs; and
- 5 chemicals do not have DTLs because these chemicals are not included in the draft MRBCA Technical Guidance document (*MDNR, 2005*).

Of the 29 chemicals which exceeded DTLs, 25 chemicals were retained as chemicals of concern (COCs). The remaining 4 chemicals are metals namely aluminum, arsenic, barium, and lead. These are further evaluated because (i) metals are naturally occurring chemicals and they may not be site related, and (ii) the above analysis was conservatively performed using total metal concentrations. Note that total concentrations are generally higher than dissolved concentrations due to the presence of suspended materials.

Aluminum: Total aluminum was detected once in the only sample submitted for aluminum analysis from MW2A during the December 2001 sampling event at 2.53 milligrams per liter (mg/L), which exceeded the lowest DTL of 0.00597 mg/L. Aluminum was not retained as a COC in soil (refer Part 2 of this report), hence it is most likely naturally occurring.

Hence aluminum is not included as a COC.

Arsenic: Total arsenic was detected 29 times out of 111 samples and the maximum detected concentration was 0.092 mg/L which exceeded the lowest DTL of 0.01 mg/L (25 of the 29 detected concentrations exceeded the DTL in MW1, MW2A,

MW4, MW6, MW9, MW10, MW11, MW12, and MW13 in eight of the last nine sampling events).

Dissolved arsenic was not detected in any of the 34 samples; however, for all but one sample the detection limit exceeded the lowest DTL.

Arsenic is retained as a COC and in the future will be analyzed with a lower detection limit.

Barium: Total barium was detected 111 times out of 111 samples and the maximum detected concentration was 3.1 mg/L which exceeded the lowest DTL of 2.0 mg/L (2 of the 111 detected concentrations exceeded the DTL in MW12 and MW13 in the 1/05 and 10/00 sampling events, respectively).

Dissolved barium was detected 34 times out of 34 samples. None of the dissolved barium detects exceeded the lowest DTL for barium.

Hence barium is not included as a COC.

Lead: Total lead was detected 49 times out of 111 samples and the maximum detected concentration was 0.142 mg/L which exceeded the lowest DTL of 0.015 mg/L (9 of the 49 detects exceeded the DTL in MW4, MW5, MW7, MW12, and MW13 in six of the last 9 sampling events).

Dissolved lead was detected 4 times out of 34 samples. None of the dissolved lead detects exceeded the lowest DTL for lead.

Hence lead is not included as a COC.

For the 31 chemicals for which the maximum detected concentrations did not exceed DTLs, the ratio of the maximum detected concentrations to DTLs for the organic chemicals (26) was calculated and is presented in Table 1-4. Of these 26 chemicals, 3 chemicals were within 20% of DTLs and were conservatively retained as COCs. The remaining 23 chemicals were eliminated. The 5 metals were eliminated.

Of the 5 chemicals without DTLs, cyclohexanone was the only chemical used on site, however it was detected only once in the 117 samples and was not included as a COC. For the 4 chemicals not used on-site, 1, 2, 3-trimethyl benzene and bentazon were detected at a frequency greater than 5% and were retained as COCs. The remaining 2 chemicals not used on-site and were detected at a frequency less than 5% and hence were not included as COCs.

Of the 65 chemicals detected, a total of 31 have been retained and are presented in Table 1-5.

4.0 CONSIDERATION OF CHEMICALS NEVER DETECTED

For the 171 chemicals never detected, their maximum and minimum detection limits were compared with Tier 1 RBTLs (see Table 1-6). Based on this comparison the following observations are made:

- 49 chemicals do not have Tier 1 RBTLs; and
- For the remaining 122 chemicals, their minimum detection limits were less than Tier 1 RBTLs

The 49 chemicals without Tier 1 RBTLs are discussed below.

- 1 chemical (stirophos) was used on-site and was evaluated qualitatively. Total of 13 samples were analyzed (one per monitoring well) only in February 2005 sampling event. 1 sample had maximum detection limit of 0.002 mg/L in MW6. 12 samples had detection limit of 0.001 mg/L. Tier 1 RBTL for this chemical will be developed and compared with detection limits;
- 1 chemical has not been used during past 20 years and was eliminated; and
- The remaining 47 chemicals were not used on-site and were eliminated.

For 122 chemicals with RBTLs, three possible cases were identified and are presented in Figure 1-2. These cases are discussed below.

Case 1: RBTL exceeded the maximum detection limit. 119 chemicals met this criterion and are not included as COCs.

Case 2: RBTL less than minimum detection limit. None of the chemicals met this criterion.

Case 3: RBTL between maximum detection limit and minimum detection limit. 3 chemicals (acrolein, n-hexane, and heptachlor) met this criterion. These chemicals had maximum detection limits greater than Tier 1 RBTLs and were evaluated qualitatively as below.

Acrolein:

- Total of 114 samples were analyzed.
- 1 sample had maximum detection limit of 5 mg/L (MW2A, 8/99). 7 of the next 9 sampling events had detection limits below the Tier 1 RBTL, including the three most recent sampling events (12/02, 3/03, and 1/05).
- 4 samples had detection limit between maximum detection limit and Tier 1 RBTL (1.15 mg/L), 2 in MW2A, 1 in MW3, and 1 in MW1.
 - MW2A had 2 detection limits of 2.5 mg/L. In the 5/02 and 9/02 sampling events; however, the final 3 sampling events (12/02, 2/03, and 1/05) had detection limits below the Tier 1 RBTL, as well as 5 of the 6 previous sampling events.

- MW3 had one detection limit of 2.5 mg/L in the 2/99 sampling event; however, 9 sampling events thereafter had detection limits below the Tier 1 RBTL.
- MW11 had one detection limit of 2.5 mg/L in the 2/99 sampling event; however, the 7 previous sampling events had detection limits below the Tier 1 RBTL.
- 109 samples had detection limits less than Tier 1 RBTL.

Therefore, this chemical is not included as a COC.

n-Hexane:

- Total of 65 samples were analyzed.
- 1 sample had maximum detection limit of 2.5 mg/L MW2A (1/05). 5 of the previous 6 sampling events had detection limits below the Tier 1 RBTL.
- 4 samples had detection limits between maximum detection limit and Tier 1 RBTL (0.48 mg/L), 1 in each MW1, MW2A, MW3, and MW11.
 - MW1 had one detection limit of 0.5 mg/L in the 1/05 sampling event; however, the 4 previous sampling events detection limits were below the Tier 1 RBTL.
 - MW2A had one detection limit of 1.0 mg/L in the 8/99 sampling event; however, 4 of the next 5 sampling events had detection limits below the Tier 1 RBTL.
 - MW3 had one detection limit of 0.5 mg/L in the 2/99 sampling event; however, the next 4 sampling events had detection limits below the Tier 1 RBTL.
 - MW11 had one detection limit of 0.5 mg/L in the 1/05 sampling event; however, the 4 previous sampling events had detection limits below the Tier 1 RBTL.
- 60 samples had detection limits less than Tier 1 RBTL.

Therefore, this chemical is not included as a COC.

Heptachlor:

- Total of 80 samples were analyzed.
- 1 sample had maximum detection limit of 0.002 mg/L (MW11, 3/03). The 5 previous sampling events and the last sampling event (1/05) had detection limits below the Tier 1 RBTL (0.00112 mg/L).
- 1 sample had detection limits between maximum detection limit and Tier 1 RBTL in MW2A. MW2A had one detection limit of 0.0015 mg/L in the 1/02 sampling event; however, the next 5 sampling events had detection limits below the Tier 1 RBTL.
- 78 samples had detection limits less than Tier 1 RBTL.

Therefore, this chemical is not included as a COC.

Of the 171 chemicals never detected, 1 chemical has been retained.

5.0 CONCLUSION

As discussed above, the COCs for groundwater were determined based on the following factors:

- Comparison of maximum detected concentrations with DTLs;
- Comparison of maximum detection limits with RBTLs; and
- Consideration of whether the chemical was used on-site and frequency of detection.

Table 1-7 lists the COCs. Of the 236 chemicals in groundwater samples, a total of 32 chemicals have been retained as COC.

6.0 REFERENCES

Departmental Missouri Risk-Based Corrective Action Technical Guidance. MDNR, February 2005.

Technical Memorandum: March 12, 2003 MDNR Split Groundwater Samples. RAM Group, Inc., March 2004

TABLES

Table 1-1
Comparison of PM Resources Duplicate Groundwater Samples (All Concentrations in mg/L)
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Groundwater

Parameter	MW1			MW7			MW10					
	10/24/00	10/24/00 dup	Avg.	8/16/01	8/17/01 DUP	Avg.	5/16/02	6/4/2002 dup	Avg'	12/06/02	12/6/02 dup	Avg.
Heavy Metals (Dissolved)												
Arsenic	NS	NS	NS	<0.025	<0.0050	<0.0050	NS	NS	NS	NS	NS	NS
Barium	NS	NS	NS	0.181	0.19	0.1855	NS	NS	NS	NS	NS	NS
Cadmium	NS	NS	NS	<0.002	<0.0020	<0.002	NS	NS	NS	NS	NS	NS
Chromium	NS	NS	NS	<0.010	0.0029	0.00395	NS	NS	NS	NS	NS	NS
Lead	NS	NS	NS	<0.002	<0.0050	<0.002	NS	NS	NS	NS	NS	NS
Mercury	NS	NS	NS	<0.0002	<0.00020	<0.0002	NS	NS	NS	NS	NS	NS
Selenium	NS	NS	NS	<0.050	<0.0050	<0.0050	NS	NS	NS	NS	NS	NS
Silver	NS	NS	NS	<0.010	<0.0020	<0.0020	NS	NS	NS	NS	NS	NS
Heavy Metals (Total)												
Aluminum	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Arsenic	<0.025	0.012	0.01225	<0.025	<0.0050	<0.0050	0.026	0.047	0.0365	0.026	<0.025	0.01925
Barium	0.164	0.17	0.167	0.205	0.2	0.2025	0.51	0.528	0.519	0.56	0.443	0.5015
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.0020	<0.002	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002
Chromium	<0.010	0.004	0.0045	<0.010	0.0035	0.00425	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Lead	<0.002	<0.005	<0.002	<0.002	<0.0050	<0.002	<0.005	NS	<0.005	0.0057	0.002	0.00385
Mercury	<0.0002	<0.002	<0.0002	<0.0002	<0.00020	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Selenium	<0.050	0.018	0.0215	<0.050	<0.0050	<0.0050	<0.01	<0.050	<0.01	<0.01	<0.050	<0.01
Silver	<0.010	<0.002	<0.002	<0.010	<0.0020	<0.0020	<0.005	<0.010	<0.005	<0.005	<0.010	<0.005
Volatile Organics												
1,1,1,2-Tetrachloroethane	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
1,1,1-Trichloroethane	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
1,1,2,2-Tetrachloroethane	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
1,1,2-Trichloro-1,2,2-trifluoroethane	<0.020	NS	<0.020	<0.02	NS	<0.02	<0.001	<0.020	<0.001	<0.001	<0.020	<0.001
1,1,2-Trichloroethane	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
1,1-Dichloro-2-propanone	<0.050	NS	<0.050	<0.05	NS	<0.05	NP	<0.050	<0.050	NP	<0.050	<0.050
1,1-Dichloroethane	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
1,1-Dichloroethene	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
1,1-Dichloropropanone	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1,1-Dichloropropene	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
1,2,3-Trichlorobenzene	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
1,2,3-Trichloropropane	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
1,2,3-Trimethylbenzene	<0.005	NS	<0.005	<0.005	NS	<0.005	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
1,2,4-Trichlorobenzene	<0.005	<0.001	<0.001	<0.005	NS	<0.005	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
1,2,4-Trimethylbenzene	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
1,2-Dibromo-3-chloropropane (DBCP)	<0.005	<0.002	<0.002	<0.005	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.005	<0.002
1,2-Dibromoethane (EDB)	<0.005	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
1,2-Dichlorobenzene	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
1,2-Dichloroethane	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
1,2-Dichloropropane	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
1,3,5-Trimethylbenzene	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
1,3-Dichlorobenzene	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
1,3-Dichloropropane	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
1,4-Dichloro-2-butene	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1,4-Dichlorobenzene	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
1,4-Dioxane	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1-Chlorobutane	<0.005	NS	<0.005	<0.005	NS	<0.005	NP	<0.005	<0.005	NP	<0.005	<0.005
2,2-Dichloropropane	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
2-Butanone (MEK)	<0.050	<0.05	<0.05	<0.05	NS	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2-Chloroethyl vinyl ether	<0.020	<0.05	<0.020	<0.02	<0.05	<0.02	<0.05	<0.02	<0.02	<0.05	<0.0200	<0.0200
2-Chlorotoluene	<0.005	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
2-Hexanone	<0.050	NS	<0.050	<0.05	NS	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
2-Nitropropane	<0.050	NS	<0.050	<0.05	NS	<0.05	NP	<0.05	<0.05	NP	<0.05	<0.05
2-Propenoic acid, methyl ester	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Table 1-1
Comparison of PM Resources Duplicate Groundwater Samples (All Concentrations in mg/L)
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Groundwater

Parameter	MW1			MW7			MW10					
	10/24/00	10/24/00 dup	Avg.	8/16/01	8/17/01 DUP	Avg.	5/16/02	6/4/2002 dup	Avg'	12/06/02	12/6/02 dup	Avg.
4-Chlorotoluene	<0.005	<0.001	<0.001	<0.005	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.001	<0.005	<0.001
4-Methyl-2-pentanone (MIBK)	<0.050	<0.05	<0.05	<0.05	<0.050	<0.05	<0.05	<0.050	<0.05	<0.05	<0.050	<0.05
Acetone	<0.050	<0.05	<0.05	<0.05	<0.050	<0.05	<0.05	<0.050	<0.05	<0.05	<0.050	<0.05
Acetonitrile	<0.050	NS	<0.050	<0.05	NS	<0.05	NS	<0.050	<0.050	NS	<0.050	<0.050
Acrolein	<0.100	<0.05	<0.05	<0.1	<0.050	<0.050	<0.05	<0.100	<0.05	<0.05	<0.100	<0.05
Acrylonitrile	<0.005	<0.05	<0.005	<0.005	<0.050	<0.005	<0.05	<0.005	<0.005	<0.05	<0.005	<0.005
Allyl chloride	<0.005	NS	<0.005	<0.005	NS	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Benzene	<0.002	<0.001	<0.001	<0.002	<0.0010	<0.0010	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001
Bromobenzene	<0.005	<0.002	<0.002	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
Bromochloromethane	<0.005	NS	<0.005	<0.005	NS	<0.005	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
Bromodichloromethane	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
Bromoforn	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
Bromomethane	<0.010	<0.001	<0.001	<0.01	<0.0010	<0.0010	<0.001	<0.010	<0.001	<0.001	<0.010	<0.001
Butyl acetate	<0.050	NS	<0.050	<0.05	NS	<0.05	NP	<0.050	<0.050	NP	<0.050	<0.050
Carbon disulfide	<0.005	<0.001	<0.001	<0.005	NS	<0.005	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
Carbon tetrachloride	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
Chloroacetonitrile	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chlorobenzene	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
Chloroethane	<0.010	<0.001	<0.001	<0.01	<0.0010	<0.0010	<0.001	<0.010	<0.001	<0.001	<0.010	<0.001
Chloroform	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Chloromethane (Methyl chloride)	<0.010	<0.001	<0.001	<0.01	<0.0010	<0.0010	<0.001	<0.010	<0.001	<0.001	<0.010	<0.001
Chloroprene (2-Chloro-1,3-butadiene)	<0.020	NS	<0.020	<0.02	NS	<0.02	<0.05	<0.020	<0.020	<0.05	<0.020	<0.020
cis-1,2-Dichloroethene	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
cis-1,3-Dichloropropene	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
cis-1,4-Dichloro-2-butene	<0.005	NS	<0.005	<0.005	NS	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cyclohexanone	<0.050	NS	<0.050	<0.05	NS	<0.05	<0.01	<0.050	<0.01	<0.01	<0.050	<0.01
Dibromochloromethane (Chlorodibromomethane)	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
Dibromomethane (Methylene bromide)	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
Dichlorodifluoromethane	<0.010	<0.001	<0.001	<0.01	<0.0010	<0.0010	<0.001	<0.010	<0.001	<0.001	<0.010	<0.001
Diethyl ether	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Di-isopropylether	NS	<0.001	<0.001	NS	<0.0010	<0.0010	<0.001	NS	<0.001	<0.001	NS	<0.001
Ethyl acetate	<0.010	NS	<0.010	<0.01	NS	<0.01	NP	<0.010	<0.010	NP	<0.010	<0.010
Ethyl ether (1,1'-Oxybis-ethane)	<0.005	NS	<0.005	<0.005	NS	<0.005	NP	<0.005	<0.005	NP	<0.005	<0.005
Ethyl methacrylate	<0.005	NS	<0.005	<0.005	NS	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
Heptane	<0.020	NS	<0.020	<0.02	NS	<0.02	NP	<0.020	<0.020	NP	<0.020	<0.020
Hexachlorobutadiene	<0.005	NS	<0.005	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
Hexachloroethane	<0.010	NS	<0.010	<0.01	<0.010	<0.01	NS	<0.010	<0.010	NS	<0.010	<0.010
n-Hexane	<0.020	NS	<0.020	<0.02	NS	<0.02	NP	<0.020	<0.020	NP	<0.020	<0.020
Iodomethane	<0.005	NS	<0.005	<0.005	NS	<0.005	<0.05	<0.005	<0.005	<0.05	<0.005	<0.005
Isopropylbenzene	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
m,p-Xylenes	<0.005	NS	<0.005	<0.005	NS	<0.005	NS	<0.005	<0.005	NS	<0.005	<0.005
Methacrylonitrile	<0.010	NS	<0.010	<0.01	NS	<0.01	<0.05	<0.010	<0.010	<0.05	<0.010	<0.010
Methyl Methacrylate	<0.005	NS	<0.005	<0.005	NS	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Methyl tert-butyl ether * (MTBE)	<0.002	<0.001	<0.001	<0.002	<0.0010	<0.0010	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001
Methylacrylate	<0.010	NS	<0.010	<0.01	NS	<0.01	NP	<0.010	<0.010	NP	<0.010	<0.010
Methylene chloride	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Naphthalene	<0.010	<0.001	<0.001	<0.01	<0.0010	<0.0010	<0.005	<0.010	<0.005	<0.005	<0.010	<0.005
n-Butylbenzene	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
Nitrobenzene	<0.050	NS	<0.050	<0.05	NS	<0.05	<0.01	<0.050	<0.01	<0.01	<0.050	<0.01
n-Propylbenzene	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
o-Xylenes	<0.005	NS	<0.005	<0.005	NS	<0.005	NS	<0.005	<0.005	NS	<0.005	<0.005

Table 1-1
Comparison of PM Resources Duplicate Groundwater Samples (All Concentrations in mg/L)
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Groundwater

Parameter	MW1			MW7			MW10					
	10/24/00	10/24/00 dup	Avg.	8/16/01	8/17/01 DUP	Avg.	5/16/02	6/4/2002 dup	Avg'	12/06/02	12/6/02 dup	Avg.
Pentachloroethane	<0.020	NS	<0.020	<0.02	NS	<0.02	<0.005	<0.020	<0.005	<0.005	<0.020	<0.005
p-Isopropyltoluene	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
Propionitrile	<0.050	NS	<0.050	<0.05	NS	<0.05	<0.05	<0.050	<0.05	<0.05	<0.050	<0.05
sec-Butylbenzene	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
Styrene	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
tert-Butylbenzene	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
Tetrachloroethene	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
Tetrahydrofuran	<0.020	NS	<0.020	<0.02	NS	<0.02	NP	<0.020	<0.020	NP	<0.020	<0.020
Toluene	<0.005	<0.001	<0.001	<0.005	<0.0050	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
trans-1,2-Dichloroethene	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
trans-1,3-Dichloropropene	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
trans-1,4-Dichloro-2-butene	<0.010	NS	<0.010	<0.01	NS	<0.01	<0.005	<0.010	<0.005	<0.005	<0.005	<0.005
Trichloroethene	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
Trichlorofluoromethane	<0.005	<0.001	<0.001	<0.005	<0.0010	<0.0010	<0.001	<0.005	<0.001	<0.001	<0.005	<0.001
Vinyl acetate	<0.010	NS	<0.010	<0.01	NS	<0.01	<0.05	<0.010	<0.010	<0.05	<0.010	<0.010
Vinyl chloride	<0.002	<0.001	<0.001	<0.002	<0.0010	<0.0010	<0.001	<0.002	<0.001	<0.001	<0.002	<0.001
Xylene, total	NS	<0.003	<0.003	NS	<0.0030	<0.0030	<0.003	NS	<0.003	<0.003	NS	<0.003
Semivolatile Organics												
1,2,4-Trichlorobenzene	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
1,2-Dichlorobenzene	<0.010	NS	<0.010	<0.01	<0.0010	<0.0010	NS	<0.010	<0.010	NS	<0.010	<0.010
1,3-Dichlorobenzene	<0.010	NS	<0.010	<0.01	<0.0010	<0.0010	NS	<0.010	<0.010	NS	<0.010	<0.010
1,4-Dichlorobenzene	<0.010	NS	<0.010	<0.01	<0.0010	<0.0010	NS	<0.010	<0.010	NS	<0.010	<0.010
2,4,5-Trichlorophenol	<0.010	NS	<0.010	<0.01	NS	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
2,4,6-Trichlorophenol	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
2,4-Dichlorophenol	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
2,4-Dimethylphenol	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
2,4-Dinitrophenol	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
2,4-Dinitrotoluene	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
2,6-Dinitrotoluene	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
2-Chloronaphthalene	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
2-Chlorophenol	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
2-Methoxy-4-methylphenol	<0.010	NS	<0.010	<0.01	NS	<0.01	NP	<0.010	<0.010	NP	<0.010	<0.010
2-Methylnaphthalene	<0.010	NS	<0.010	<0.01	NS	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
2-Nitroaniline	<0.040	NS	<0.040	<0.04	NS	<0.04	<0.01	<0.041	<0.01	<0.01	<0.040	<0.01
2-Nitrophenol	<0.020	<0.01	<0.01	<0.02	<0.010	<0.01	<0.01	<0.020	<0.01	<0.01	<0.020	<0.01
3,3'-Dichlorobenzidine	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
3-Nitroaniline	<0.040	NS	<0.040	<0.04	NS	<0.04	<0.01	<0.041	<0.01	<0.01	<0.040	<0.01
4,6-Dinitro-2-methylphenol	<0.040	<0.01	<0.01	<0.04	<0.01	<0.01	<0.01	<0.041	<0.01	<0.01	<0.040	<0.01
4-Bromophenyl phenyl ether	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
4-Chloro-3-methylphenol	<0.020	<0.01	<0.01	<0.02	<0.010	<0.010	<0.01	<0.020	<0.01	<0.01	<0.020	<0.01
4-Chloroaniline	<0.020	NS	<0.020	<0.02	NS	<0.02	<0.01	<0.020	<0.01	<0.01	<0.020	<0.01
4-Chlorophenyl phenyl ether	<0.010	<0.01	<0.01	<0.01	NS	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
4-Nitroaniline	<0.020	NS	<0.020	<0.02	NS	<0.02	<0.01	<0.020	<0.01	<0.01	<0.020	<0.01
4-Nitrophenol	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Acenaphthene	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Acenaphthylene	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Aniline	<0.020	NS	<0.020	<0.02	NS	<0.02	<0.01	<0.020	<0.01	<0.01	<0.020	<0.01
Andracene	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Azobenzene	<0.010	NS	<0.010	<0.01	NS	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Benzidine	<0.040	<0.05	<0.040	<0.04	<0.05	<0.04	<0.05	<0.041	<0.041	<0.05	<0.040	<0.040
Benzo(a)anthracene	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Benzo(a)pyrene	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Benzo(b)fluoranthene	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Benzo(g,h,i)perylene	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01

Table 1-1
Comparison of PM Resources Duplicate Groundwater Samples (All Concentrations in mg/L)
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Groundwater

Parameter	MW1			MW7			MW10					
	10/24/00	10/24/00 dup	Avg.	8/16/01	8/17/01 DUP	Avg.	5/16/02	6/4/2002 dup	Avg'	12/06/02	12/6/02 dup	Avg.
Benzo(k)fluoranthene	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Benzoic acid	<0.050	NS	<0.050	<0.05	NS	<0.05	<0.01	<0.051	<0.01	<0.01	<0.051	<0.01
Benzyl alcohol	<0.020	NS	<0.020	<0.02	NS	<0.02	<0.01	<0.020	<0.01	<0.01	<0.020	<0.01
Bis(2-chloroethoxy)methane	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Bis(2-chloroethyl)ether	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Bis(2-chloroisopropyl)ether	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Bis(2-ethylhexyl)phthalate	<0.006	<0.01	<0.006	<0.006	<0.010	<0.006	<0.01	0.009	0.007	<0.01	<0.006	<0.006
Butyl benzyl phthalate	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Carbazole	<0.020	NS	<0.020	<0.02	NS	<0.02	<0.01	<0.020	<0.01	<0.01	<0.020	<0.01
Chrysene	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Dibenzo(a,h)anthracene	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Dibenzofuran	<0.010	NS	<0.010	<0.01	NS	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Diethyl phthalate	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Dimethyl phthalate	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Di-n-butyl phthalate	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Di-n-octyl phthalate	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Fluoranthene	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Fluorene	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Hexachlorobenzene	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Hexachloro-1,3-butadiene (Hexachlorobutadiene)	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Hexachlorocyclopentadiene	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Hexachloroethane	<0.010	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Indeno(1,2,3-cd)pyrene	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Isophorone	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
m,p-Cresol (3,4-Methylphenol)	<0.010	NS	<0.010	<0.01	NS	<0.01	NS	<0.010	<0.010	NS	<0.010	<0.010
m-Cresol (3-Methylphenol)	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.01	NS	<0.01
Naphthalene	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Nitrobenzene	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
N-Nitrosodimethylamine	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
N-Nitroso-di-n-propylamine	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
N-Nitrosodiphenylamine	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
o-Cresol (2-Methylphenol)	<0.010	NS	<0.010	<0.01	NS	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
p-Cresol (4-Methylphenol)	NS	NS	NS	NS	NS	NS	<0.01	NS	<0.01	<0.01	NS	<0.01
Pentachlorophenol	<0.040	<0.01	<0.01	<0.04	<0.010	<0.010	<0.01	<0.041	<0.01	<0.01	<0.040	<0.01
Phenanthrene	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Phenol	<0.005	<0.01	<0.005	<0.005	<0.010	<0.005	<0.01	<0.005	<0.005	<0.01	<0.005	<0.005
Pyrene	<0.010	<0.01	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01	<0.01	<0.010	<0.01
Pyridine	<0.020	NS	<0.020	<0.02	NS	<0.02	<0.01	<0.020	<0.01	<0.01	<0.020	<0.01
Chlorinated Pesticides												
4,4-DDD	NS	NS	NS	NS	<0.0005	<0.0005	<0.0005	NS	<0.0005	<0.0005	NS	<0.0005
4,4-DDE	NS	NS	NS	NS	<0.0005	<0.0005	<0.0005	NS	<0.0005	<0.0005	NS	<0.0005
4,4-DDT	NS	NS	NS	NS	<0.0005	<0.0005	<0.0005	NS	<0.0005	<0.0005	NS	<0.0005
Aldrin	NS	NS	NS	NS	<0.0005	<0.0005	<0.0005	NS	<0.0005	<0.0005	NS	<0.0005
alpha-BHC	NS	NS	NS	NS	<0.0005	<0.0005	<0.0005	NS	<0.0005	<0.0005	NS	<0.0005
beta-BHC	NS	NS	NS	NS	<0.0005	<0.0005	<0.0005	NS	<0.0005	<0.0005	NS	<0.0005
alpha-Chloradane	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chlordane	NS	NS	NS	NS	<0.005	<0.005	<0.002	NS	<0.002	<0.002	NS	<0.002
delta-BHC	NS	NS	NS	NS	<0.0005	<0.0005	<0.0005	NS	<0.0005	<0.0005	NS	<0.0005
Dieldrin	NS	NS	NS	NS	<0.0005	<0.0005	<0.0005	NS	<0.0005	<0.0005	NS	<0.0005
Endosulfan I	NS	NS	NS	NS	<0.0005	<0.0005	<0.0005	NS	<0.0005	<0.0005	NS	<0.0005
Endosulfan II	NS	NS	NS	NS	<0.0005	<0.0005	<0.0005	NS	<0.0005	<0.0005	NS	<0.0005
Endosulfan Sulfate	NS	NS	NS	NS	<0.0005	<0.0005	<0.0005	NS	<0.0005	<0.0005	NS	<0.0005
Endrin	NS	NS	NS	<0.00005	<0.0005	<0.00005	<0.0005	<0.00005	<0.00006	<0.0005	<0.00005	<0.00005

Table 1-1
Comparison of PM Resources Duplicate Groundwater Samples (All Concentrations in mg/L)
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Groundwater

Parameter	MW1			MW7			MW10					
	10/24/00	10/24/00 dup	Avg.	8/16/01	8/17/01 DUP	Avg.	5/16/02	6/4/2002 dup	Avg'	12/06/02	12/6/02 dup	Avg.
Endrin Aldehyde	NS	NS	NS	NS	<0.0005	<0.0005	<0.0005	NS	<0.0005	<0.0005	NS	<0.0005
Endrin Ketone	NS	NS	NS	NS	NS	NS	<0.0005	NS	<0.0005	<0.0005	NS	<0.0005
gamma-BHC (Lindane)	NS	NS	NS	<0.00005	<0.0005	<0.00005	<0.0002	<0.00006	<0.00006	<0.0002	<0.00005	<0.00005
gamma-Chlorodane	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Heptachlor	NS	NS	NS	NS	<0.0005	<0.0005	<0.0004	NS	<0.0004	<0.0004	NS	<0.0004
Heptachlor Epoxide	NS	NS	NS	NS	<0.0005	<0.0005	<0.0002	NS	<0.0002	<0.0002	NS	<0.0002
Methoxychlor	NS	NS	NS	<0.00005	<0.0005	<0.00005	<0.0005	<0.00006	<0.00006	<0.0005	<0.00005	<0.00005
Toxaphene	<0.0005	<0.01	<0.0005	<0.0005	<0.010	<0.0005	<0.003	<0.00056	<0.00056	<0.003	<0.0005	<0.0005
Organophosphorus Pesticides						<0						
Azinphos-Methyl	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.0001	<0.0001
Bolstar (Sulprofos)	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.0001	<0.0001
Chlorpyrifos	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.0001	<0.0001
Coumaphos	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.0005	<0.0005
Demeton, -O and -S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Diazinon	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.00010	<0.00010
Dichlorvos	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.00010	<0.00010
Dimethoate	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Disulfoton	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.00010	<0.00010
EPN	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Ethoprop	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.00010	<0.00010
Ethyl Parathion	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Fensulfuthion	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.00010	<0.00010
Fenthion	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.00010	<0.00010
Malathion	NS	NS	NS	<0.01	NS	<0.01	<0.001	NS	<0.001	<0.001	NS	<0.001
Merphos	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.00010	<0.00010
Methyl parathion	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.00010	<0.00010
Mevinphos	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.00010	<0.00010
Naled	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.0005	<0.0005
Phorate	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.00010	<0.00010
Ronnel	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.00010	<0.00010
Stirophos	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Sulfotep	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TEPP	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Tokuthion (Prothothiofos)	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Trichloronate	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chlorinated Herbicides						<0						
2,4,5-T	NS	NS	NS	NS	<0.0020	<0.0020	<0.002	<0.00021	<0.00021	<0.002	<0.0002	<0.0002
2,4,5-TP (Silvex)	NS	NS	NS	<0.0002	<0.0020	<0.0002	<0.002	<0.00021	<0.00021	<0.002	<0.0002	<0.0002
2,4-D	NS	NS	NS	<0.0002	<0.0020	<0.0002	<0.002	<0.00021	<0.00021	<0.002	<0.0002	<0.0002
2,4-DB	NS	NS	NS	NS	<0.0020	<0.0020	<0.002	<0.00021	<0.00021	<0.002	<0.0002	<0.0002
3,5-Dichlorobenzoic Acid	NS	NS	NS	NS	NS	NS	NS	<0.00021	<0.00021	NS	<0.0002	<0.0002
Acifluorfen	NS	NS	NS	NS	NS	NS	NS	<0.00021	<0.00021	NS	<0.0002	<0.0002
Bentazon	NS	NS	NS	NS	NS	NS	NS	<0.00021	<0.00021	NS	0.00218	0.00218
Dalapon	NS	NS	NS	NS	<0.0020	<0.0020	<0.002	<0.0014	<0.0014	<0.002	<0.0013	<0.0013
Dicamba	NS	NS	NS	NS	<0.0020	<0.0020	<0.002	<0.00021	<0.00021	<0.002	<0.0002	<0.0002
Dichlorprop	NS	NS	NS	NS	<0.0020	<0.0020	<0.002	<0.00021	<0.00021	<0.002	<0.0002	<0.0002
Dimoseb	NS	NS	NS	NS	<0.0020	<0.0020	<0.002	<0.00021	<0.00021	<0.002	<0.0002	<0.0002
MCPA	NS	NS	NS	NS	<0.0020	<0.0020	<0.05	<0.00021	<0.00021	<0.05	<0.0002	<0.0002
MCPP	NS	NS	NS	NS	<0.0020	<0.0020	<0.05	<0.00021	<0.00021	<0.05	<0.0002	<0.0002
Picloram	NS	NS	NS	NS	NS	NS	NS	<0.00021	<0.00021	NS	<0.0002	<0.0002

Note:

Highlight shows chemicals detected in either one or both samples.

Table 1-1
Comparison of PM Resources Duplicate Groundwater Samples (All Concentrations in mg/L)
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Groundwater

Parameter	MW11											
	10/24/00	10/24/00 Dup	10/24/00 Avg	10/26/01	10/30/01 Dup	10/30/01 Avg	9/13/02	9/13/02 Dup	9/13/02 Avg	1/12/05	1/12/05 dup	1/12/05 Avg
Heavy Metals (Dissolved)												
Arsenic	NS	NS	NS	< 0.025	<0.005	< 0.025	NS	NS	NS	<0.020	<0.020	<0.020
Barium	NS	NS	NS	0.692	0.77	0.731	NS	NS	NS	1	0.96	0.98
Cadmium	NS	NS	NS	< 0.002	<0.002	< 0.002	NS	NS	NS	<0.0050	<0.0050	<0.0050
Chromium	NS	NS	NS	< 0.010	<0.002	< 0.010	NS	NS	NS	<0.010	<0.010	<0.010
Lead	NS	NS	NS	< 0.002	<0.005	< 0.002	NS	NS	NS	<0.0050	<0.0050	<0.0050
Mercury	NS	NS	NS	< 0.0002	<0.0002	< 0.0002	NS	NS	NS	<0.00020	<0.00020	<0.00020
Selenium	NS	NS	NS	< 0.050	0.006	0.0155	NS	NS	NS	<0.020	<0.020	<0.020
Silver	NS	NS	NS	< 0.010	<0.002	< 0.010	NS	NS	NS	<0.010	<0.010	<0.010
Heavy Metals (Total)												
Aluminum	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Arsenic	< 0.025	0.029	0.02075	<0.025	<0.005	<0.005	<0.01	<0.025	<0.01	<0.020	0.024	0.017
Barium	1.14	1.5	1.32	0.807	0.95	0.8785	0.75	0.532	0.641	1	1	1
Cadmium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.005	<0.002	<0.002	<0.0050	<0.0050	<0.0050
Chromium	<0.010	0.005	0.005	<0.010	0.06	0.0325	<0.01	<0.010	<0.01	0.027	0.019	0.023
Lead	< 0.002	<0.005	< 0.002	0.002	0.011	0.011	<0.005	<0.040	<0.005	0.0053	<0.0050	0.0039
Mercury	< 0.0002	<0.0002	< 0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.00020	<0.00020	<0.00020
Selenium	NS	NS	NS	<0.050	<0.005	<0.005	<0.01	<0.050	<0.01	<0.020	<0.020	<0.020
Silver	NS	NS	NS	<0.010	<0.002	<0.002	<0.005	<0.010	<0.005	<0.010	<0.010	<0.010
Volatile Organics												
1,1,1,2-Tetrachloroethane	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
1,1,1-Trichloroethane	<0.005	<0.025	<0.005	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
1,1,2,2-Tetrachloroethane	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
1,1,2-Trichloro-1,2,2-trifluoroethane	NS	NS	NS	<0.02	NS	<0.02	<0.001	<0.020	<0.001	<0.050	<0.050	<0.050
1,1,2-Trichloroethane	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
1,1-Dichloro-2-propanone	NS	NS	NS	<0.05	NS	<0.05	NP	<0.050	<0.050	NS	NS	NS
1,1-Dichloroethane	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
1,1-Dichloroethane	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
1,1-Dichloropropanone	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1,1-Dichloropropene	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
1,2,3-Trichlorobenzene	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
1,2,3-Trichloropropane	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
1,2,3-Trimethylbenzene	NS	NS	NS	<0.005	NS	<0.005	0.0046	<0.005	0.00355	<0.050	<0.050	<0.050
1,2,4-Trichlorobenzene	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
1,2,4-Trimethylbenzene	NS	NS	NS	0.0054	0.0058	0.0056	0.0048	0.0071	0.00595	<0.050	<0.050	<0.050
1,2-Dibromo-3-chloropropane (DBCP)	NS	NS	NS	<0.005	<0.004	<0.004	<0.002	<0.005	<0.002	<0.10	<0.10	<0.10
1,2-Dibromoethane (EDB)	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
1,2-Dichlorobenzene	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
1,2-Dichloroethane	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
1,2-Dichloropropane	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
1,3,5-Trimethylbenzene	NS	NS	NS	<0.005	<0.002	<0.002	0.0014	<0.005	0.00195	<0.050	<0.050	<0.050
1,3-Dichlorobenzene	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
1,3-Dichloropropane	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
1,4-Dichloro-2-butene	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
1,4-Dichlorobenzene	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
1,4-Dioxane	NS	NS	NS	NS	NS	NS	NS	NS	NS	<5.0	<5.0	<5.0
1-Chlorobutane	NS	NS	NS	<0.005	NS	<0.005	NP	<0.005	<0.005	NS	NS	NS
2,2-Dichloropropane	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
2-Butanone (MEK)	<0.05	<0.2	<0.05	<0.05	<0.1	<0.05	<0.05	<0.050	<0.05	<0.50	<0.50	<0.50
2-Chloroethyl vinyl ether	NS	NS	NS	<0.02	<0.1	<0.02	<0.05	<0.020	<0.020	<2.5	<2.5	<2.5
2-Chlorotoluene	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
2-Hexanone	NS	NS	NS	<0.05	NS	<0.05	<0.05	<0.050	<0.05	<0.50	<0.50	<0.50
2-Nitropropane	NS	NS	NS	<0.05	NS	<0.05	NP	<0.050	<0.050	NS	NS	NS
2-Propenoic acid, methyl ester	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Table 1-1
Comparison of PM Resources Duplicate Groundwater Samples (All Concentrations in mg/L)
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Groundwater

Parameter	MW11											
	10/24/00	10/24/00 Dup	10/24/00 Avg	10/26/01	10/30/01 Dup	10/30/01 Avg	9/13/02	9/13/02 Dup	9/13/02 Avg	1/12/05	1/12/05 dup	1/12/05 Avg
4-Chlorotoluene	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	NS	<0.001	<0.050	<0.050	<0.050
4-Methyl-2-pentanone (MIBK)	NS	NS	NS	<0.05	<0.1	<0.05	<0.05	<0.050	<0.05	<0.50	<0.50	<0.50
Acetone	NS	NS	NS	<0.05	<0.1	<0.05	<0.05	<0.050	<0.05	<5.0	<5.0	<5.0
Acetonitrile	NS	NS	NS	<0.05	NS	<0.05	NS	<0.050	<0.050	<2.5	<2.5	<2.5
Acrolein	NS	NS	NS	<0.1	<0.1	<0.1	<0.05	<0.100	<0.05	<2.5	<2.5	<2.5
Acrylonitrile	NS	NS	NS	<0.005	<0.1	<0.005	<0.05	<0.005	<0.005	<0.50	<0.50	<0.50
Allyl chloride	NS	NS	NS	<0.005	NS	<0.005	<0.005	<0.005	<0.005	<0.25	<0.25	<0.25
Benzene	NS	NS	NS	<0.002	0.0041	0.00255	0.0028	0.0045	0.00365	<0.050	<0.050	<0.050
Bromobenzene	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
Bromochloromethane	NS	NS	NS	<0.005	NS	<0.005	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
Bromodichloromethane	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
Bromoform	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
Bromomethane	NS	NS	NS	<0.01	<0.002	<0.002	<0.001	<0.010	<0.001	<0.050	<0.050	<0.050
Butyl acetate	NS	NS	NS	<0.05	NS	<0.05	NP	<0.050	<0.050	NS	NS	NS
Carbon disulfide	<0.005	<0.025	<0.005	<0.005	NS	<0.005	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
Carbon tetrachloride	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
Chloroacetonitrile	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Chlorobenzene	NS	NS	NS	<0.005	0.0036	0.00305	0.0068	0.0104	0.0086	<0.050	<0.050	<0.050
Chloroethane	NS	NS	NS	<0.01	<0.002	<0.002	<0.001	<0.010	<0.001	<0.050	<0.050	<0.050
Chloroform	<0.005	<0.12	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.25	<0.25	<0.25
Chloromethane (Methyl chloride)	NS	NS	NS	<0.01	<0.002	<0.002	<0.001	<0.010	<0.001	<0.050	<0.050	<0.050
Chloroprene (2-Chloro-1,3-butadiene)	NS	NS	NS	<0.02	NS	<0.02	<0.05	<0.020	<0.020	<2.5	<2.5	<2.5
cis-1,2-Dichloroethene	NS	NS	NS	<0.005	<0.01	<0.005	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
cis-1,3-Dichloropropene	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
cis-1,4-Dichloro-2-butene	NS	NS	NS	<0.005	NS	<0.005	<0.005	<0.005	<0.005	<1.3	<1.2	<1.2
Cyclohexanone	<0.05	NS	<0.05	<0.05	NS	<0.05	<0.001	<0.050	<0.001	<0.050	<0.050	<0.050
Dibromochloromethane (Chlorodibromomethane)	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
Dibromomethane (Methylene bromide)	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
Dichlorodifluoromethane	NS	NS	NS	<0.01	<0.002	<0.002	<0.001	<0.010	<0.001	<0.050	<0.050	<0.050
Diethyl ether	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Di-isopropylether	NS	NS	NS	NS	<0.002	<0.002	<0.001	NS	<0.001	<0.050	<0.050	<0.050
Ethyl acetate	NS	NS	NS	<0.01	NS	<0.01	NP	<0.010	<0.010	NS	NS	NS
Ethyl ether (1,1'-Oxybis-ethane)	NS	NS	NS	<0.005	NS	<0.005	NP	<0.050	<0.050	<0.050	<0.050	<0.050
Ethyl methacrylate	NS	NS	NS	<0.005	NS	<0.005	<0.005	<0.050	<0.005	<0.25	<0.25	<0.25
Ethylbenzene	0.254	0.79	0.522	0.0524	0.038	0.0452	0.15	0.193	0.1715	0.21	0.36	0.285
Heptane	NS	NS	NS	<0.02	NS	<0.02	NP	<0.020	<0.020	NS	NS	NS
Hexachlorobutadiene	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
Hexachloroethane	NS	NS	NS	<0.01	NS	<0.01	NS	<0.010	<0.010	NS	NS	NS
n-Hexane	NS	NS	NS	<0.02	NS	<0.02	NP	<0.020	<0.020	<1.0	<0.50	<0.50
Iodomethane	NS	NS	NS	<0.005	NS	<0.005	<0.05	<0.005	<0.005	<0.50	<0.50	<0.50
Isopropylbenzene	NS	NS	NS	<0.005	0.0052	0.00385	0.01	0.0156	0.0128	<0.050	<0.050	<0.050
m,p-Xylenes	NS	NS	NS	0.127	NS	0.127	NS	0.125	0.125	NS	NS	NS
Methacrylonitrile	NS	NS	NS	<0.01	NS	<0.01	<0.05	<0.010	<0.010	<2.5	<2.5	<2.5
Methyl Methacrylate	NS	NS	NS	<0.005	NS	<0.005	<0.005	<0.005	<0.005	<0.25	<0.25	<0.25
Methyl tert-butyl ether * (MTBE)	<0.002	<0.025	<0.002	<0.002	<0.002	<0.002	0.002	0.003	0.0025	<0.050	<0.050	<0.050
Methylacrylate	NS	NS	NS	<0.01	NS	<0.01	NP	<0.010	<0.010	NS	NS	NS
Methylene chloride	<0.005	<0.12	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.25	<0.25	<0.25
Naphthalene	NS	NS	NS	0.019	0.023	0.021	0.029	0.0164	0.0227	0.27	0.43	0.35
n-Butylbenzene	NS	NS	NS	<0.005	NS	<0.005	0.0011	<0.005	0.0018	<0.050	<0.050	<0.050
Nitrobenzene	NS	NS	NS	<0.05	NS	<0.05	<0.01	<0.050	<0.01	NS	NS	NS
n-Propylbenzene	NS	NS	NS	<0.005	<0.002	<0.002	0.0014	<0.005	0.00195	<0.050	<0.050	<0.050
o-Xylenes	NS	NS	NS	0.0885	NS	0.0885	NS	0.0374	0.0374	NS	NS	NS

Table 1-1
Comparison of PM Resources Duplicate Groundwater Samples (All Concentrations in mg/L)
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Groundwater

Parameter	MW11											
	10/24/00	10/24/00 Dup	10/24/00 Avg	10/26/01	10/30/01 Dup	10/30/01 Avg	9/13/02	9/13/02 Dup	9/13/02 Avg	1/12/05	1/12/05 dup	1/12/05 Avg
Pentachloroethane	NS	NS	NS	<0.02	NS	<0.02	<0.005	<0.020	<0.005	<0.25	<0.25	<0.25
p-Isopropyltoluene	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
Propionitrile	NS	NS	NS	<0.05	NS	<0.05	<0.05	<0.050	<0.05	<2.5	<2.5	<2.5
sec-Butylbenzene	NS	NS	NS	<0.005	0.0048	0.00365	0.0028	0.0055	0.00415	<0.050	<0.050	<0.050
Styrene	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
tert-Butylbenzene	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
Tetrachloroethene	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
Tetrahydrofuran	NS	NS	NS	<0.02	NS	<0.02	NP	<0.020	<0.020	<5.0	5	3.75
Toluene	<0.005	<0.025	<0.005	<0.005	<0.01	<0.005	<0.005	<0.005	<0.005	<0.25	<0.25	<0.25
trans-1,2-Dichloroethene	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
trans-1,3-Dichloropropene	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
trans-1,4-Dichloro-2-butene	NS	NS	NS	<0.01	NS	<0.01	<0.005	<0.010	<0.005	<0.12	<0.12	<0.12
Trichloroethene	NS	NS	NS	<0.005	<0.01	<0.005	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
Trichlorofluoromethane	NS	NS	NS	<0.005	<0.002	<0.002	<0.001	<0.005	<0.001	<0.050	<0.050	<0.050
Vinyl acetate	NS	NS	NS	<0.01	NS	<0.01	<0.05	<0.010	<0.010	<0.50	<0.50	<0.50
Vinyl chloride	NS	NS	NS	<0.002	<0.002	<0.002	<0.001	<0.002	<0.001	<0.050	<0.050	<0.050
Xylene, total	2.06	6	4.03	NS	0.14	0.14	0.092	NS	0.092	0.89	1.4	1.145
Semivolatile Organics												
1,2,4-Trichlorobenzene	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.005	<0.005	<0.010	<0.010	<0.010
1,2-Dichlorobenzene	NS	NS	NS	<0.01	NS	<0.01	NS	<0.005	<0.005	NS	NS	NS
1,3-Dichlorobenzene	NS	NS	NS	<0.01	NS	<0.01	NS	<0.005	<0.005	NS	NS	NS
1,4-Dichlorobenzene	NS	NS	NS	<0.01	NS	<0.01	NS	<0.005	<0.005	NS	NS	NS
2,4,5-Trichlorophenol	NS	NS	NS	<0.010	NS	<0.010	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
2,4,6-Trichlorophenol	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
2,4-Dichlorophenol	NS	NS	NS	<0.010	<0.1	<0.010	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
2,4-Dimethylphenol	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
2,4-Dinitrophenol	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
2,4-Dinitrotoluene	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
2,6-Dinitrotoluene	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
2-Chloronaphthalene	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
2-Chlorophenol	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
2-Methoxy-4-methylphenol	NS	NS	NS	<0.01	NS	<0.01	NP	<0.010	<0.010	NS	NS	NS
2-Methylnaphthalene	NS	NS	NS	0.017	NS	0.017	<0.01	<0.010	<0.01	0.36	0.34	0.35
2-Nitroaniline	NS	NS	NS	<0.04	NS	<0.04	<0.01	<0.040	<0.01	<0.010	<0.010	<0.010
2-Nitrophenol	NS	NS	NS	<0.02	<0.1	<0.02	<0.01	<0.020	<0.01	<0.010	<0.010	<0.010
3,3'-Dichlorobenzidine	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
3-Nitroaniline	NS	NS	NS	<0.04	NS	<0.04	<0.01	<0.040	<0.01	<0.010	<0.010	<0.010
4,6-Dinitro-2-methylphenol	NS	NS	NS	<0.04	<0.1	<0.04	<0.01	<0.040	<0.01	<0.010	<0.010	<0.010
4-Bromophenyl phenyl ether	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
4-Chloro-3-methylphenol	NS	NS	NS	<0.02	<0.1	<0.02	<0.01	<0.020	<0.01	<0.010	<0.010	<0.010
4-Chloroaniline	NS	NS	NS	<0.02	NS	<0.02	<0.01	<0.020	<0.01	NS	NS	NS
4-Chlorophenyl phenyl ether	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.020	<0.01	<0.010	<0.010	<0.010
4-Nitroaniline	NS	NS	NS	<0.02	NS	<0.02	<0.01	<0.020	<0.01	<0.010	<0.010	<0.010
4-Nitrophenol	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Acenaphthene	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Acenaphthylene	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Aniline	NS	NS	NS	<0.02	NS	<0.02	<0.01	<0.020	<0.01	<0.010	<0.010	<0.010
Anthracene	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Azobenzene	NS	NS	NS	<0.01	NS	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Benzidine	NS	NS	NS	<0.04	<0.5	<0.04	<0.05	<0.040	<0.040	<0.050	<0.050	<0.050
Benzo(a)anthracene	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Benzo(a)pyrene	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Benzo(b)fluoranthene	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Benzo(g,h,i)perylene	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010

Table 1-1
Comparison of PM Resources Duplicate Groundwater Samples (All Concentrations in mg/L)
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Groundwater

Parameter	MW11											
	10/24/00	10/24/00 Dup	10/24/00 Avg	10/26/01	10/30/01 Dup	10/30/01 Avg	9/13/02	9/13/02 Dup	9/13/02 Avg	1/12/05	1/12/05 dup	1/12/05 Avg
Benzo(k)fluoranthene	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Benzoic acid	NS	NS	NS	<0.05	NS	<0.05	<0.01	<0.051	<0.01	<0.010	<0.010	<0.010
Benzyl alcohol	NS	NS	NS	<0.02	NS	<0.02	<0.01	<0.020	<0.01	<0.010	<0.010	<0.010
Bis(2-chloroethoxy)methane	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Bis(2-chloroethyl)ether	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Bis(2-chloroisopropyl)ether	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Bis(2-ethylhexyl)phthalate	<0.006	<0.25	<0.006	<0.006	<0.1	<0.006	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Butyl benzyl phthalate	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Carbazole	NS	NS	NS	<0.02	NS	<0.02	<0.01	<0.020	<0.01	<0.010	<0.010	<0.010
Chrysene	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Dibenzo(a,h)anthracene	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Dibenzofuran	NS	NS	NS	<0.01	NS	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Diethyl phthalate	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Dimethyl phthalate	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Di-n-butyl phthalate	<0.01	<0.25	<0.01	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Di-n-octyl phthalate	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Fluoranthene	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Fluorene	<0.01	<0.25	<0.01	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Hexachlorobenzene	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Hexachloro-1,3-butadiene (Hexachlorobutadiene)	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Hexachlorocyclopentadiene	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Hexachloroethane	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Indeno(1,2,3-cd)pyrene	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Isophorone	NS	NS	NS	<0.010	<0.1	<0.010	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
m,p-Cresol (3,4-Methylphenol)	NS	NS	NS	<0.01	NS	<0.01	NS	<0.010	<0.010	<0.010	<0.010	<0.010
m-Cresol (3-Methylphenol)	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Naphthalene	0.025	<0.25	0.075	0.026	<0.1	0.038	0.01	<0.010	0.0075	0.18	0.31	0.245
Nitrobenzene	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
N-Nitrosodimethylamine	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
N-Nitroso-di-n-propylamine	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
N-Nitrosodiphenylamine	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
o-Cresol (2-Methylphenol)	NS	NS	NS	<0.01	NS	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
p-Cresol (4-Methylphenol)	NS	NS	NS	NS	NS	NS	<0.01	NS	<0.01	NS	NS	NS
Pentachlorophenol	NS	NS	NS	0.395	0.52	0.4575	<0.01	0.09	0.0475	<0.010	<0.010	<0.010
Phenanthrene	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Phenol	<0.005	<0.25	<0.005	<0.005	<0.1	<0.005	<0.01	<0.005	<0.005	<0.010	<0.010	<0.010
Pyrene	NS	NS	NS	<0.01	<0.1	<0.01	<0.01	<0.010	<0.01	<0.010	<0.010	<0.010
Pyridine	NS	NS	NS	<0.02	NS	<0.02	<0.01	<0.020	<0.01	<0.010	<0.010	<0.010
Chlorinated Pesticides												
4,4-DDD	NS	NS	NS	NS	<0.0005	<0.0005	<0.0005	<0.00005	<0.00005	<0.00050	<0.00050	<0.00050
4,4-DDE	NS	NS	NS	NS	<0.0005	<0.0005	<0.0005	<0.00005	<0.00005	<0.00050	<0.00050	<0.00050
4,4-DDT	NS	NS	NS	NS	<0.0005	<0.0005	<0.0005	<0.00005	<0.00005	<0.00050	<0.00050	<0.00050
Aldrin	NS	NS	NS	NS	<0.0005	<0.0005	<0.0005	<0.00005	<0.00005	<0.00050	<0.00050	<0.00050
alpha-BHC	NS	NS	NS	NS	<0.0005	<0.0005	<0.0005	0.00021	0.00023	<0.00050	<0.00050	<0.00050
beta-BHC	NS	NS	NS	NS	<0.0005	<0.0005	<0.0005	<0.00005	<0.00005	<0.00050	<0.00050	<0.00050
alpha-Chlorodane	NS	NS	NS	NS	NS	NS	NS	<0.0005	<0.0005	NS	NS	NS
Chlordane	NS	NS	NS	NS	<0.005	<0.005	<0.002	<0.0005	<0.0005	<0.0050	<0.0050	<0.0050
delta-BHC	NS	NS	NS	NS	<0.0005	<0.0005	<0.0005	<0.00005	<0.00005	<0.00050	<0.00050	<0.00050
Dieldrin	NS	NS	NS	NS	<0.0005	<0.0005	<0.0005	<0.00005	<0.00005	<0.00050	<0.00050	<0.00050
Endosulfan I	NS	NS	NS	NS	<0.0005	<0.0005	<0.0005	<0.00005	<0.00005	<0.00050	<0.00050	<0.00050
Endosulfan II	NS	NS	NS	NS	<0.0005	<0.0005	<0.0005	<0.00005	<0.00005	<0.00050	<0.00050	<0.00050
Endosulfan Sulfate	NS	NS	NS	NS	<0.0005	<0.0005	<0.0005	<0.00005	<0.00005	<0.00050	<0.00050	<0.00050
Endrin	0.0001	<0.0005	0.000175	<0.00005	<0.0005	<0.00005	<0.0005	<0.00005	<0.00005	<0.00050	<0.00050	<0.00050

Table 1-1
Comparison of PM Resources Duplicate Groundwater Samples (All Concentrations in mg/L)
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Groundwater

Parameter	MW11											
	10/24/00	10/24/00 Dup	10/24/00 Avg	10/26/01	10/30/01 Dup	10/30/01 Avg	9/13/02	9/13/02 Dup	9/13/02 Avg	1/12/05	1/12/05 dup	1/12/05 Avg
Endrin Aldehyde	NS	NS	NS	NS	<0.0005	<0.0005	<0.0005	<0.00005	<0.00005	<0.00050	<0.00050	<0.00050
Endrin Ketone	NS	NS	NS	NS	NS	NS	<0.0005	<0.00005	<0.00005	<0.00050	<0.00050	<0.00050
gamma-BHC (Lindane)	0.0658	0.23	0.1479	<0.0005	<0.0005	<0.0005	0.005	0.00461	0.004805	0.00077	0.0027	0.001735
gamma-Chloradane	NS	NS	NS	NS	NS	NS	NS	<0.0005	<0.0005	NS	NS	NS
Heptachlor	NS	NS	NS	NS	<0.0005	<0.0005	<0.0004	<0.00005	<0.00005	<0.00050	<0.00050	<0.00050
Heptachlor Epoxide	NS	NS	NS	NS	<0.0005	<0.0005	<0.0002	<0.00005	<0.00005	<0.00050	<0.00050	<0.00050
Methoxychlor	0.00039	<0.0005	0.00032	<0.00005	<0.0005	<0.00005	<0.0005	<0.00005	<0.00005	<0.00050	<0.00050	<0.00050
Toxaphene	NS	NS	NS	<0.0005	<0.01	<0.0005	<0.003	<0.0005	<0.0005	<0.010	0.064	0.0345
Organophosphorus Pesticides												
Azinphos-Methyl	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.0010	<0.0010	<0.0010
Bolstar (Sulprofos)	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.00073	<0.00073	<0.00073
Chlorpyrifos	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.00073	<0.00073	<0.00073
Coumaphos	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.0010	<0.0010	<0.0010
Demeton, -O and -S	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.0020	<0.0020	<0.0020
Diazinon	NS	NS	NS	NS	NS	NS	NS	NS	NS	0.019	0.027	0.023
Dichlorvos	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.0021	<0.0021	<0.0021
Dimethoate	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.0010	<0.0010	<0.0010
Disulfoton	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.00073	<0.00073	<0.00073
EPN	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.00042	<0.00042	<0.00042
Ethioprop	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.0010	<0.0010	<0.0010
Ethyl Parathion	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.0010	<0.0010	<0.0010
Fensulfotion	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.00083	<0.00083	<0.00083
Fenthion	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.00083	<0.00083	<0.00083
Malathion	<0.005	NS	<0.005	<0.01	NS	<0.01	<0.001	NS	<0.001	<0.0010	<0.0010	<0.0010
Merphos	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.0010	<0.0010	<0.0010
Methyl parathion	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.00062	<0.00062	<0.00062
Mevinphos	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.0010	<0.0010	<0.0010
Naled	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.0021	<0.0021	<0.0021
Phorate	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.00042	<0.00042	<0.00042
Ronnel	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.00073	<0.00073	<0.00073
Sinrophos	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.0010	<0.0010	<0.0010
Sulfotep	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.00073	<0.00073	<0.00073
TEPP	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.0083	<0.0083	<0.0083
Tokuthion (Prothiothiofos)	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.00073	<0.00073	<0.00073
Trichloronate	NS	NS	NS	NS	NS	NS	NS	NS	NS	<0.00083	<0.00083	<0.00083
Chlorinated Herbicides												
2,4,5-T	NS	NS	NS	NS	<0.002	<0.002	<0.002	<0.0002	<0.0002	<0.0020	<0.0020	<0.0020
2,4,5-TP (Silvex)	<0.000075	<0.002	<0.000075	<0.0002	<0.002	<0.0002	<0.002	<0.0002	<0.0002	<0.0020	<0.0020	<0.0020
2,4-D	<0.0002	<0.002	<0.0002	<0.0002	<0.002	<0.0002	<0.002	<0.0002	<0.0002	<0.0020	<0.0020	<0.0020
2,4-DB	NS	NS	NS	NS	<0.002	<0.002	<0.002	<0.0002	<0.0002	<0.0020	<0.0020	<0.0020
3,5-Dichlorobenzoic Acid	NS	NS	NS	NS	NS	NS	NS	<0.0002	<0.0002	NS	NS	NS
Acifluorfen	NS	NS	NS	NS	NS	NS	NS	<0.0002	<0.0002	NS	NS	NS
Bentazon	NS	NS	NS	NS	NS	NS	NS	<0.0002	<0.0002	NS	NS	NS
Dalapon	NS	NS	NS	NS	<0.002	<0.002	<0.002	<0.0013	<0.0013	<0.0020	<0.0020	<0.0020
Dicamba	NS	NS	NS	NS	<0.002	<0.002	<0.002	<0.0002	<0.0002	<0.0020	<0.0020	<0.0020
Dichlorprop	NS	NS	NS	NS	<0.002	<0.002	<0.002	<0.0002	<0.0002	<0.0020	<0.0020	<0.0020
Dinoseb	NS	NS	NS	NS	<0.002	<0.002	<0.002	<0.0002	<0.0002	<0.0020	<0.0020	<0.0020
MCPA	NS	NS	NS	NS	<0.002	<0.002	<0.05	<0.0002	<0.0002	<0.050	<0.050	<0.050
MCPP	NS	NS	NS	NS	<0.002	<0.002	<0.05	<0.0002	<0.0002	<0.050	<0.050	<0.050
Picloram	NS	NS	NS	NS	NS	NS	NS	<0.0002	<0.0002	NS	NS	NS

Note:
Highlight shows chemicals detected in
either one or both samples.

Table 1-2
Comparison of PM Resources Data and MDNR Split Data for Groundwater (All Concentrations in mg/L)
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Groundwater

Parameter	MW1				MW2A				MW6				MW-13			
	3/12/2003 PM	1st Qtr '03 MDNR Split	Ratio for Detected Chemical (PM/MDNR)	Ratio of Detection Limit (PM/MDNR)	3/12/2003 PM	1st Qtr '03 MDNR Avg	Ratio for Detected Chemical (PM/MDNR)	Ratio of Detection Limit (PM/MDNR)	3/12/2003 PM	1st Qtr '03 MDNR Split	Ratio for Detected Chemical (PM/MDNR)	Ratio of Detection Limit (PM/MDNR)	3/12/2003 PM	1st Qtr '03 MDNR Split	Ratio for Detected Chemical (PM/MDNR)	Ratio of Detection Limit (PM/MDNR)
Heavy Metals (Dissolved)																
Arsenic	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Barium	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Cadmium	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Chromium	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Lead	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Mercury	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Selenium	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Silver	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Heavy Metals (Total)																
Aluminum	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Arsenic	<0.010	0.00887	NA		<0.010	0.00497	NA		<0.01	0.00242	NA		<0.01	0.00195	NA	
Barium	0.25	0.24	1.04		0.24	0.226	1.06		0.48	0.432	1.11		0.51	0.478	1.07	
Cadmium	<0.005	0.00045	NA		<0.005	0.00025	NA		<0.005	0.00025	NA		<0.005	0.00025	NA	
Chromium	<0.01	0.001	NA		<0.01	0.001	NA		<0.01	0.00114	NA		<0.01	0.00293	NA	
Lead	<0.005	0.001	NA		<0.005	0.001825	NA		<0.005	0.00233	NA		<0.005	0.00183	NA	
Mercury	<0.0002	0.00005	NA		<0.0002	0.00005	NA		<0.0002	0.00005	NA		<0.0002	0.00005	NA	
Selenium	<0.01	0.00684	NA		0.011	0.00068	16.18		<0.01	0.0005	NA		<0.01	0.0103	NA	
Silver	<0.005	0.001	NA		<0.005	0.001	NA		<0.005	0.001	NA		<0.005	0.001	NA	
Volatile Organics																
1,1,1,2-Tetrachloroethane	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
1,1,1-Trichloroethane	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
1,1,2,2-Tetrachloroethane	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
1,1,2-Trichloro-1,2,2-trifluoroethane	<0.001	NS		NA	<0.001	NS		NA	<0.001	NS		NA	<0.001	NS		NA
1,1,2-Trichloroethane	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
1,1-Dichloro-2-propanone	NP	NS		NA	NP	NS		NA	NP	NS		NA	NP	NS		NA
1,1-Dichloroethane	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
1,1-Dichloroethene	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
1,1-Dichloropropanone	NS	<0.002		NA	NS	<0.002		NA	NS	<0.002		NA	NS	<0.002		NA
1,1-Dichloropropene	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
1,2,3-Trichlorobenzene	<0.001	<0.005		0.2	<0.001	<0.005		0.2	<0.001	<0.005		0.2	<0.001	<0.005		0.2
1,2,3-Trichloropropane	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
1,2,3-Trimethylbenzene	0.0075	NS	NA		0.002	NS	NA		0.0015	NS	NA		<0.001	NS		NA
1,2,4-Trichlorobenzene	<0.001	<0.005		0.2	<0.001	<0.005		0.2	<0.001	<0.005		0.2	<0.001	<0.005		0.2
1,2,4-Trimethylbenzene	0.0042	0.00656	0.61		<0.001	0.001945	NA		<0.001	<0.001		1	<0.001	<0.001		1
1,2-Dibromo-3-chloropropane (DBP)	<0.002	<0.001		2	<0.002	<0.001		2	<0.002	<0.001		2	<0.002	<0.001		2
1,2-Dibromoethane (EDB)	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
1,2-Dichlorobenzene	<0.001	<0.001		1	<0.001	0.0008	NA		<0.001	<0.001		1	<0.001	<0.001		1
1,2-Dichloroethane	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
1,2-Dichloropropane	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
1,3,5-Trimethylbenzene	0.0017	0.0033	0.52		<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
1,3-Dichlorobenzene	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
1,3-Dichloropropane	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
1,4-Dichloro-2-butene	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
1,4-Dichlorobenzene	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
1,4-Dioxane	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
1-Chlorobutane	NP	<0.001		NA	NP	<0.001		NA	NP	<0.001		NA	NP	<0.001		NA
2,2-Dichloropropane	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
2-Butanone (MEK)	<0.05	<0.005		10	<0.05	<0.005		10	<0.05	<0.005		10	<0.05	<0.005		10
2-Chloroethyl vinyl ether	<0.05	NS		NA	<0.05	NS		NA	<0.05	NS		NA	<0.05	NS		NA
2-Chlorotoluene	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
2-Hexanone	<0.05	<0.002		25	<0.05	<0.002		25	<0.05	<0.002		25	<0.05	<0.002		25
2-Nitropropane	NP	<0.001		NA	NP	<0.001		NA	NP	<0.001		NA	NP	<0.001		NA
2-Propenoic acid, methyl ester	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
4-Chlorotoluene	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
4-Methyl-2-pentanone (MIBK)	<0.05	<0.001		50	<0.05	<0.001		50	<0.05	<0.001		50	<0.05	<0.001		50
Acetone	<0.05	<0.02		2.5	<0.05	<0.02		2.5	<0.05	<0.02		2.5	<0.05	<0.02		2.5
Acetonitrile	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA

Table 1-2
Comparison of PM Resources Data and MDNR Split Data for Groundwater (All Concentrations in mg/L)
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Groundwater

Parameter	MW1				MW2A				MW6				MW-13			
	3/12/2003 PM	1st Qtr '03 MDNR Split	Ratio for Detected Chemical (PM/MDNR)	Ratio of Detection Limit (PM/MDNR)	3/12/2003 PM	1st Qtr '03 MDNR Avg	Ratio for Detected Chemical (PM/MDNR)	Ratio of Detection Limit (PM/MDNR)	3/12/2003 PM	1st Qtr '03 MDNR Split	Ratio for Detected Chemical (PM/MDNR)	Ratio of Detection Limit (PM/MDNR)	3/12/2003 PM	1st Qtr '03 MDNR Split	Ratio for Detected Chemical (PM/MDNR)	Ratio of Detection Limit (PM/MDNR)
Acrolein	<0.05	NS		NA	<0.05	NS		NA	<0.05	NS		NA	<0.05	NS		NA
Acrylonitrile	<0.05	<0.002		25	<0.05	<0.002		25	<0.05	<0.002		25	<0.05	<0.002		25
Allyl chloride	<0.005	<0.001		5	<0.005	<0.001		5	<0.005	<0.001		5	<0.005	<0.001		5
Benzene	0.0016	0.00243	0.66		<0.0010	<0.001		1	0.0015	0.00212	0.71		<0.001	<0.001		1
Bromobenzene	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
Bromochloromethane	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
Bromodichloromethane	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
Bromoform	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
Bromomethane	<0.001	<0.005		0.2	<0.001	<0.005		0.2	<0.001	<0.005		0.2	<0.001	<0.005		0.2
Butyl acetate	NP	NS		NA	NP	NS		NA	NP	NS		NA	NP	NS		NA
Carbon disulfide	<0.001	<0.001		1	<0.001	<0.001		1	0.001	0.00114	0.88		<0.001	<0.001		1
Carbon tetrachloride	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
Chloroacetonitrile	NS	<0.025		NA	NS	<0.025		NA	NS	<0.025		NA	NS	<0.025		NA
Chlorobenzene	0.32	0.771	0.42		2.1	4.61	0.46		0.16	0.216	0.74		<0.001	<0.001		1
Chloroethane	<0.001	<0.005		0.2	<0.001	<0.005		0.2	<0.001	<0.005		0.2	<0.001	<0.005		0.2
Chloroform	<0.005	<0.001		5	<0.005	<0.001		5	<0.005	<0.001		5	<0.005	<0.001		5
Chloromethane (Methyl chloride)	<0.001	<0.025		0.04	<0.001	<0.025		0.04	<0.001	<0.025		0.04	<0.001	<0.025		0.04
Chloroprene (2-Chloro-1,3-butadiene)	<0.05	NS		NA	<0.05	NS		NA	<0.05	NS		NA	<0.05	NS		NA
cis-1,2-Dichloroethane	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
cis-1,3-Dichloropropene	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
cis-1,4-Dichloro-2-butene	<0.005	NS		NA	<0.005	NS		NA	<0.005	NS		NA	<0.005	NS		NA
Cyclohexanone	<0.01	NS		NA	<0.01	NS		NA	<0.01	NS		NA	<0.01	NS		NA
Dibromochloromethane (Chlorodibromomethane)	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
Dibromomethane (Methylene bromide)	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
Dichlorodifluoromethane	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
Diethyl ether	NS	<0.02		NA	NS	<0.02		NA	NS	<0.02		NA	NS	<0.02		NA
Di-isopropylether	<0.001	NS		NA	<0.001	NS		NA	<0.001	NS		NA	<0.001	NS		NA
Ethyl acetate	NP	NS		NA	NP	NS		NA	NP	NS		NA	NP	NS		NA
Ethyl ether (1,1'-Oxybis-ethane)	NP	NS		NA	NP	NS		NA	NP	NS		NA	NP	NS		NA
Ethyl methacrylate	<0.005	<0.001		5	<0.005	<0.001		5	<0.005	<0.001		5	<0.005	<0.001		5
Ethylbenzene	0.0054	0.0087	0.62		0.0018	0.002915	0.62		<0.001	0.00135	NA		<0.001	<0.001		1
Heptane	NP	NS		NA	NP	NS		NA	NP	NS		NA	NP	NS		NA
Hexachlorobutadiene	<0.001	<0.002		0.5	<0.001	<0.002		0.5	<0.001	<0.002		0.5	<0.001	<0.002		0.5
Hexachloroethane	NS	<0.001		NA	NS	<0.001		NA	NS	<0.001		NA	NS	<0.001		NA
n-Hexane	NP	NS		NA	NP	NS		NA	NP	NS		NA	NP	NS		NA
Iodomethane	<0.05	<0.005		10	<0.05	<0.005		10	<0.05	<0.005		10	<0.05	<0.005		10
Isopropylbenzene	0.0018	0.0037	0.49		<0.001	0.0009	NA		0.0045	0.0071	0.63		<0.001	<0.001		1
m,p-Xylenes	NS	0.0144	NA		NS	0.003465	NA		NS	0.00123	NA		NS	<0.001		NA
Methacrylonitrile	<0.05	<0.001		50	<0.05	<0.001		50	<0.05	<0.001		50	<0.05	<0.001		50
Methyl Methacrylate	<0.005	<0.001		5	<0.005	<0.001		5	<0.005	<0.001		5	<0.005	<0.001		5
Methyl tert-butyl ether * (MTBE)	0.0011	<0.001	NA		<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
Methylacrylate	NP	<0.01		NA	NP	<0.01		NA	NP	<0.01		NA	NP	<0.01		NA
Methylene chloride	<0.005	<0.02		0.25	<0.005	<0.02		0.25	<0.005	<0.02		0.25	<0.005	<0.02		0.25
Naphthalene	0.017	0.0214	0.79		0.013	0.02495	0.52		<0.005	0.0111	NA		<0.005	<0.005		1
n-Butylbenzene	<0.001	<0.001		1	<0.001	<0.001		1,0000	0.0012	0.0027	0.45		<0.001	<0.001		1
Nitrobenzene	NS	<0.01		NA	NS	<0.01		NA	NS	<0.01		NA	NS	<0.01		NA
n-Propylbenzene	<0.01	<0.001		10	<0.001	<0.001		1	0.0024	0.00368	0.65		<0.001	<0.001		1
o-Xylenes	NS	0.134	NA		NS	0.012155	NA		NS	0.00166	NA		NS	<0.001		NA
Pentachloroethane	<0.001	<0.001		1	<0.005	<0.001		5	<0.005	<0.001		5	<0.005	<0.001		5
p-Isopropyltoluene	NP	<0.001		NA	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
Propionitrile	<0.05	<0.02		2.5	<0.05	<0.02		2.5	<0.05	<0.02		2.5	<0.05	<0.02		2.5
sec-Butylbenzene	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	0.00147	NA		<0.001	<0.001		1
Styrene	0.0029	<0.001	NA		<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
tert-Butylbenzene	<0.001	<0.002		0.5	<0.001	<0.002		0.5	<0.001	<0.002		0.5	<0.001	<0.002		0.5

Table 1-2
Comparison of PM Resources Data and MDNR Split Data for Groundwater (All Concentrations in mg/L)
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Groundwater

Parameter	MW1				MW2A				MW6				MW-13			
	3/12/2003 PM	1st Qtr '03 MDNR Split	Ratio for Detected Chemical (PM/MDNR)	Ratio of Detection Limit (PM/MDNR)	3/12/2003 PM	1st Qtr '03 MDNR Avg	Ratio for Detected Chemical (PM/MDNR)	Ratio of Detection Limit (PM/MDNR)	3/12/2003 PM	1st Qtr '03 MDNR Split	Ratio for Detected Chemical (PM/MDNR)	Ratio of Detection Limit (PM/MDNR)	3/12/2003 PM	1st Qtr '03 MDNR Split	Ratio for Detected Chemical (PM/MDNR)	Ratio of Detection Limit (PM/MDNR)
Tetrachloroethene	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
Tetrahydrofuran	NP	<0.005		NA	NP	<0.005		NA	NP	<0.005		NA	NP	<0.005		NA
Toluene	<0.005	<0.001		5	<0.005	<0.001		5	<0.005	<0.001		5	<0.005	<0.001		5
trans-1,2-Dichloroethene	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
trans-1,3-Dichloropropene	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
trans-1,4-Dichloro-2-butene	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
Trichloroethene	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
Trichlorofluoromethane	<0.001	<0.005		0.2	<0.001	<0.005		0.2	<0.001	<0.005		0.2	<0.001	<0.005		0.2
Vinyl acetate	<0.05	NS		NA	<0.05	NS		NA	<0.05	NS		NA	<0.05	NS		NA
Vinyl chloride	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1	<0.001	<0.001		1
Xylene, total	0.13	0.149	0.87		0.0071	0.015585	0.46		<0.003	0.00289	NA		<0.003	<0.001		3
Semivolatile Organic:																
1,2,4-Trichlorobenzene	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
1,2-Dichlorobenzene	NS	<0.005		NA	NS	<0.005		NA	NS	<0.005		NA	NS	<0.005		NA
1,3-Dichlorobenzene	NS	<0.005		NA	NS	<0.005		NA	NS	<0.005		NA	NS	<0.005		NA
1,4-Dichlorobenzene	NS	<0.005		NA	NS	<0.005		NA	NS	<0.005		NA	NS	<0.005		NA
2,4,5-Trichloropheno	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
2,4,6-Trichloropheno	<0.01	<0.01		1	<0.01	<0.01		1	<0.01	<0.01		1	<0.01	<0.01		1
2,4-Dichloropheno	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
2,4-Dimethylpheno	<0.01	0.0109	NA		<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
2,4-Dinitrophenol	<0.01	<0.05		0.2	<0.01	<0.05		0.2	<0.01	<0.05		0.2	<0.01	<0.05		0.2
2,4-Dinitrotoluene	<0.01	<0.02		0.5	<0.01	<0.02		0.5	<0.01	<0.02		0.5	<0.01	<0.02		0.5
2,6-Dinitrotoluene	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
2-Chloronaphthalene	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
2-Chloropheno	<0.01	<0.005		2	<0.010	0.01095	NA		<0.01	<0.005		2	<0.01	<0.005		2
2-Methoxy-4-methylpheno	NP	<0.02		NA	NP	<0.02		NA	NP	<0.02		NA	NP	<0.02		NA
2-Methylnaphthalene	0.038	0.167	0.23		<0.01	0.13995	NA		<0.01	0.0622	NA		<0.01	<0.005		2
2-Nitroaniline	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
2-Nitrophenol	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
3,3'-Dichlorobenzidine	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
3-Nitroaniline	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
4,6-Dinitro-2-methylpheno	<0.01	NS		NA	<0.01	NS		NA	<0.01	NS		NA	<0.01	NS		NA
4-Bromophenyl phenyl ethe	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
4-Chloro-3-methylpheno	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
4-Chloroaniline	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
4-Chlorophenyl phenyl ethe	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
4-Nitroaniline	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
4-Nitrophenol	<0.01	<0.05		0.2	<0.01	<0.05		0.2	<0.01	<0.05		0.2	<0.01	<0.05		0.2
Acenaphthene	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Acenaphthylene	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Aniline	<0.01	NS		NA	<0.01	NS		NA	<0.01	NS		NA	<0.01	NS		NA
Anthracene	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Azobenzene	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Benzidine	<0.05	NS		NA	<0.05	NS		NA	<0.05	NS		NA	<0.05	NS		NA
Benzo(a)anthracene	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Benzo(a)pyrene	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Benzo(b)fluoranthene	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Benzo(g,h,i)perylene	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Benzo(k)fluoranthene	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Benzoic acid	<0.01	0.0169	NA		<0.01	0.0191	NA		<0.01	<0.01		1	<0.01	<0.01		1
Benzyl alcohol	<0.01	NS		NA	<0.01	NS		NA	<0.01	NS		NA	<0.01	NS		NA
Bis(2-chloroethoxy)methan	<0.01	<0.02		0.5	<0.01	<0.02		0.5	<0.01	<0.02		0.5	<0.01	<0.02		0.5
Bis(2-chloroethyl)ethe	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Bis(2-chloroisopropyl)ethe	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Bis(2-ethylhexyl)phthalat	<0.01	<0.01		1	<0.01	<0.01		1	<0.01	<0.01		1	<0.01	<0.01		1
Butyl benzyl phthalat	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Carbazole	<0.01	NS		NA	<0.01	NS		NA	<0.01	NS		NA	<0.01	NS		NA
Chrysene	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Dibenz(a,h)anthracene	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2

Table 1-2
Comparison of PM Resources Data and MDNR Split Data for Groundwater (All Concentrations in mg/L)
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Groundwater

Parameter	MW1				MW2A				MW6				MW-13			
	3/12/2003 PM	1st Qtr '03 MDNR Split	Ratio for Detected Chemical (PM/MDNR)	Ratio of Detection Limit (PM/MDNR)	3/12/2003 PM	1st Qtr '03 MDNR Avg	Ratio for Detected Chemical (PM/MDNR)	Ratio of Detection Limit (PM/MDNR)	3/12/2003 PM	1st Qtr '03 MDNR Split	Ratio for Detected Chemical (PM/MDNR)	Ratio of Detection Limit (PM/MDNR)	3/12/2003 PM	1st Qtr '03 MDNR Split	Ratio for Detected Chemical (PM/MDNR)	Ratio of Detection Limit (PM/MDNR)
Dibenzofuran	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Diethyl phthalate	<0.01	<0.02		0.5	<0.01	<0.02		0.5	<0.01	<0.02		0.5	<0.01	<0.02		0.5
Dimethyl phthalate	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Di-n-butyl phthalate	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Di-n-octyl phthalate	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Fluoranthene	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Fluorene	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Hexachlorobenzene	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Hexachloro-1,3-butadiene	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Hexachlorocyclopentadiene	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Hexachloroethane	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Indeno(1,2,3-cd)pyrene	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Isophthalate	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
m,p-Cresol (3,4-Methylphenol)	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
m-Cresol (3-Methylphenol)	<0.01	NS		NA	<0.01	NS		NA	<0.01	NS		NA	<0.01	NS		NA
Naphthalene	0.078	0.131	0.60		<0.010	0.05035	NA		<0.01	<0.005		2	<0.01	<0.005		2
Nitrobenzene	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
N-Nitrosodimethylamine	<0.01	NS		NA	<0.01	NS		NA	<0.01	NS		NA	<0.01	NS		NA
N-Nitroso-di-n-propylamine	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
N-Nitrosodiphenylamine	<0.01	<0.05		0.2	<0.01	<0.05		0.2	<0.01	<0.05		0.2	<0.01	<0.05		0.2
o-Cresol (2-Methylphenol)	<0.01	0.0198	NA		<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
p-Cresol (4-Methylphenol)	<0.01	<0.01		1	<0.01	<0.01		1	<0.01	<0.01		1	<0.01	<0.01		1
Pentachlorophenol	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Phenanthrene	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Phenol	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Pyrene	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2	<0.01	<0.005		2
Pyridine	<0.01	NS		NA	<0.01	NS		NA	<0.01	NS		NA	<0.01	NS		NA
Chlorinated Pesticides																
4,4-DDD	<0.0005	<0.0025		0.2	<0.0005	<0.025		0.02	<0.0005	<0.00025		2	<0.0005	<0.0025		0.2
4,4-DDE	<0.0005	<0.0025		0.2	<0.0005	<0.025		0.02	<0.0005	<0.00025		2	<0.0005	<0.0025		0.2
4,4-DDT	<0.0005	<0.0025		0.2	<0.0005	<0.025		0.02	<0.0005	<0.00025		2	<0.0005	<0.0025		0.2
Aldrin	<0.0005	<0.0025		0.2	<0.0005	<0.025		0.02	<0.0005	<0.00025		2	<0.0005	<0.0025		0.2
alpha-BHC	<0.0005	<0.0025		0.2	<0.0005	<0.025		0.02	<0.0005	<0.00025		2	<0.0005	<0.0025		0.2
beta-BHC	<0.0005	<0.0025		0.2	<0.0005	<0.025		0.02	<0.0005	<0.00025		2	<0.0005	<0.0025		0.2
alpha-Chlorodane	<0.002	NS		NA	<0.002	NS		NA	<0.002	NS		NA	<0.002	NS		NA
Chlordane	NS	<0.025		NA	NS	<0.25		NA	NS	<0.0025		NA	NS	<0.025		NA
delta-BHC	<0.0005	<0.0025		0.2	<0.0005	<0.025		0.02	<0.0005	<0.00025		2	<0.0005	<0.0025		0.2
Dieldrin	<0.0005	<0.0025		0.2	<0.0005	<0.025		0.02	<0.0005	<0.00025		2	<0.0005	<0.0025		0.2
Endosulfan I	<0.0005	<0.0025		0.2	<0.0005	<0.025		0.02	<0.0005	<0.00025		2	<0.0005	<0.0025		0.2
Endosulfan II	<0.0005	<0.0025		0.2	<0.0005	<0.025		0.02	<0.0005	<0.00025		2	<0.0005	<0.0025		0.2
Endosulfan Sulfate	<0.0005	<0.0025		0.2	<0.0005	<0.025		0.02	<0.0005	<0.00025		2	<0.0005	<0.0025		0.2
Endrin	<0.0005	<0.0025		0.2	<0.0005	<0.025		0.02	<0.0005	<0.00025		2	<0.0005	<0.0025		0.2
Endrin Aldehyde	<0.0005	<0.0025		0.2	<0.0005	<0.025		0.02	<0.0005	<0.00025		2	<0.0005	<0.0025		0.2
Endrin Ketone	<0.0005	NS		NA	<0.0005	NS		NA	<0.0005	NS		NA	<0.0005	NS		NA
gamma-BHC (Lindane)	<0.0002	<0.0025		0.08	<0.0002	<0.025		0.008	<0.0002	<0.00025		0.8	<0.0002	<0.0025		0.08
gamma-Chlorodane	<0.002	NS		NA	<0.002	NS		NA	<0.002	NS		NA	<0.002	NS		NA
Heptachlor	<0.0004	<0.0025		0.16	<0.0004	<0.025		0.016	<0.0004	<0.00025		1.6	<0.0004	<0.0025		0.16
Heptachlor Epoxide	<0.0002	<0.0025		0.08	<0.0002	<0.025		0.008	<0.0002	<0.00025		0.8	<0.0002	<0.0025		0.08
Methoxychlor	<0.0005	<0.0025		0.2	<0.0005	<0.025		0.02	<0.0005	<0.00025		2	<0.0005	<0.0025		0.2
Toxaphene	<0.003	<0.025		0.12	<0.003	<0.25		0.012	<0.003	<0.0025		1.2	<0.003	<0.025		0.12
Organophosphorus Pesticides																
Azinphos-Methyl	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Bolstar (Sulprofos)	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Chlorpyrifos	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Coumaphos	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Demeton, -O and -S	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Diazinon	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Dichlorvos	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA

Table 1-2
Comparison of PM Resources Data and MDNR Split Data for Groundwater (All Concentrations in mg/L)
PM Resources, Inc., Bridgeon, Missouri

Selection of Chemicals of Concern in Groundwater

Parameter	MW1				MW2A				MW6				MW-13			
	3/12/2003 PM	1st Qtr '03 MDNR Split	Ratio for Detected Chemical (PM/MDNR)	Ratio of Detection Limit (PM/MDNR)	3/12/2003 PM	1st Qtr '03 MDNR Avg	Ratio for Detected Chemical (PM/MDNR)	Ratio of Detection Limit (PM/MDNR)	3/12/2003 PM	1st Qtr '03 MDNR Split	Ratio for Detected Chemical (PM/MDNR)	Ratio of Detection Limit (PM/MDNR)	3/12/2003 PM	1st Qtr '03 MDNR Split	Ratio for Detected Chemical (PM/MDNR)	Ratio of Detection Limit (PM/MDNR)
Dimethoate	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Disulfoton	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
EPN	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Ethoprop	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Ethyl Parathion	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Fensulfthior	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Fenuthion	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Malathion	<0.001	NS		NA	<0.001	NS		NA	<0.001	NS		NA	<0.001	NS		NA
Merphos	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Methyl parathion	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Mevinphos	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Naled	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Phorate	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Ronnel	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Sinrophas	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Sulfatep	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
TEPP	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Tokathion (Prothiothios)	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Trichloronate	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Chlorinated Herbicide																
2,4,5-T	<0.002	<0.005		0.4	<0.002	<0.005		0.4	<0.002	<0.005		0.4	<0.002	<0.0005		4
2,4,5-TP (Silvex)	<0.002	<0.005		0.4	<0.002	<0.005		0.4	0.005	<0.005	NA		<0.002	<0.0005		4
2,4-D	<0.002	<0.05		0.04	<0.002	<0.05		0.04	<0.002	<0.05		0.04	<0.002	<0.005		0.4
2,4-DB	<0.002	NS		NA	<0.002	NS		NA	<0.002	NS		NA	<0.002	NS		NA
3,5-Dichlorobenzoic Acid	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Acifluorfen	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Bentazon	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA
Dalapon	<0.002	NS		NA	<0.002	NS		NA	<0.002	NS		NA	<0.002	NS		NA
Dicamba	<0.002	NS		NA	<0.002	NS		NA	<0.002	NS		NA	<0.002	NS		NA
Dichlorprop	<0.002	NS		NA	<0.002	NS		NA	<0.002	NS		NA	<0.002	NS		NA
Dinoseb	<0.002	NS		NA	<0.002	NS		NA	<0.002	NS		NA	<0.002	NS		NA
MCPA	<0.05	NS		NA	<0.05	NS		NA	<0.05	NS		NA	<0.05	NS		NA
MCPP	<0.05	NS		NA	<0.05	NS		NA	<0.05	NS		NA	<0.05	NS		NA
Picloram	NS	NS		NA	NS	NS		NA	NS	NS		NA	NS	NS		NA

Note:

Highlight shows chemicals detected in either one or both samples.

Table 1-3
Comparison of Maximum Detected Concentrations of Chemicals in Groundwater with Default Target Levels
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Groundwater

Chemicals	Number of Samples	Number of Detects	No. of Detects/No. of Samples (%)	Maximum Detected Conc. (Max) (mg/L)	Default Target Levels (DTLs) (mg/L)	Exceed/Not Exceed (Max/DTL)	Ratio of Max/DTL	Remarks
Heavy Metals (Total)								
Aluminum	1	1	100	2.53	5.97E-03	Exceed	424	
Arsenic	111	29	26.1	0.092	1.00E-02	Exceed	9.2	
Barium	111	111	100	3.1	2.00E+00	Exceed	1.6	
Cadmium	111	4	3.6	0.001475	5.00E-03	Not Exceed	0.3	
Chromium	111	34	30.6	0.6	2.35E+01	Not Exceed	0.03	
Lead	111	49	44.1	0.142	1.50E-02	Exceed	9.5	
Mercury	111	9	8.1	0.0035	5.07E-02	Not Exceed	0.07	
Selenium	108	17	15.7	0.057	7.82E-02	Not Exceed	0.73	
Silver	108	5	4.6	0.0055	7.82E-02	Not Exceed	0.07	
Volatile Organics								
1,2,3-Trimethylbenzene	114	19	16.7	0.0604	NA	NA	NA	Not used on-site
1,2,4-Trimethylbenzene	114	21	18.4	0.37	7.10E-03	Exceed	52	
1,2-Dichlorobenzene	114	1	0.9	0.023	6.00E-01	Not Exceed	0.04	
1,3,5-Trimethylbenzene	114	11	9.6	0.037	7.10E-03	Exceed	5.2	
2-Butanone (MEK)	117	1	0.9	0.026	3.65E+00	Not Exceed	0.01	
4-Methyl-2-pentanone (MIBK)	114	3	2.6	0.209	9.27E-01	Not Exceed	0.23	
Acetone	114	2	1.8	4	2.97E+00	Exceed	1.3	
Benzene	114	23	20.2	0.013	5.00E-03	Exceed	2.6	
Carbon disulfide	117	4	3.4	0.489	5.45E-01	Not Exceed	0.9	
Chlorobenzene	114	51	44.7	11	5.79E-02	Exceed	190	
Cyclohexanone	117	1	0.9	3.42	NA	NA	NA	Used on-site
Ethyl ether (1,1'-Oxybis-ethane)	69	1	1.4	0.023	NA	NA	NA	Not used on-site
Ethylbenzene	117	28	23.9	0.56	7.00E-01	Not Exceed	0.80	
Isopropylbenzene	114	20	17.5	0.0365	3.66E-01	Not Exceed	0.10	
Methyl tert-butyl ether (MTBE)	117	5	4.3	5.65	1.46E-01	Exceed	39	
n-Butylbenzene	114	7	6.1	0.0281	1.32E-01	Not Exceed	0.21	
Nitrobenzene	114	1	0.9	0.025	1.83E-03	Exceed	14	
n-Propylbenzene	114	12	10.5	0.022	1.32E-01	Not Exceed	0.17	
sec-Butylbenzene	114	7	6.1	0.00415	1.32E-01	Not Exceed	0.03	
Styrene	114	2	1.8	0.0112	1.00E-01	Not Exceed	0.11	
Tetrahydrofuran	69	1	1.4	3.75	2.03E-02	Exceed	185	
Toluene	117	1	0.9	0.0058	1.00E+00	Not Exceed	0.01	
Xylene, total	117	26	22.2	4.03	1.00E+01	Not Exceed	0.4	
Semivolatile Organics								
2,4,5-Trichlorophenol	114	1	0.9	0.014	3.30E-01	Not Exceed	0.04	
2,4-Dimethylphenol	114	3	2.6	0.078	6.59E-02	Exceed	1.2	
2-Chlorophenol	114	11	9.6	0.47	1.65E-02	Exceed	28	
2-Methylnaphthalene	114	18	15.8	0.7	1.32E-02	Exceed	53	
4-Chloro-3-methylphenol	114	1	0.9	0.075	NA	NA	NA	Not used on-site
Acenaphthene	114	1	0.9	1.7	1.98E-01	Exceed	8.6	
Anthracene	114	1	0.9	0.29	9.89E-01	Not Exceed	0.29	
Azobenzene	114	1	0.9	0.036	1.30E-03	Exceed	28	

Table 1-3
Comparison of Maximum Detected Concentrations of Chemicals in Groundwater with Default Target Levels
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Groundwater

Chemicals	Number of Samples	Number of Detects	No. of Detects/No. of Samples (%)	Maximum Detected Conc. (Max) (mg/L)	Default Target Levels (DTLs) (mg/L)	Exceed/Not Exceed (Max/DTL)	Ratio of Max/DTL	Remarks
Benzo(a)anthracene	114	1	0.9	0.082	9.21E-04	Exceed	89	
Benzoic acid	114	2	1.8	0.012	1.32E+01	Not Exceed	0.001	
Bis(2-ethylhexyl)phthalate	117	4	3.4	1.6	6.00E-03	Exceed	267	
Butyl benzyl phthalate	114	1	0.9	1.0	3.13E+00	Not Exceed	0.32	
Carbazole	114	1	0.9	0.51	7.08E-03	Exceed	72	
Chrysene	114	1	0.9	0.088	9.21E-02	Not Exceed	1.0	
Di-n-butyl phthalate	117	1	0.9	0.53	1.56E+00	Not Exceed	0.34	
Fluoranthene	114	1	0.9	0.013	6.26E-01	Not Exceed	0.02	
Fluorene	117	1	0.9	1.7	1.32E-01	Exceed	13	
Isophorone	114	1	0.9	0.034	1.49E-01	Not Exceed	0.23	
Naphthalene	117	20	17.1	1.2	3.55E-03	Exceed	338	
o-Cresol (2-methylphenol)	113	1	0.9	0.0124	1.65E-01	Not Exceed	0.08	
Pentachlorophenol	114	6	5.3	0.4575	1.00E-03	Exceed	458	
Phenanthrene	114	1	0.9	0.62	9.89E-02	Exceed	6.3	
Pyrene	114	1	0.9	0.036	4.69E-01	Not Exceed	0.08	
Chlorinated Pesticides								
4,4-DDT	80	1	1.3	0.00009	1.98E-03	Not Exceed	0.05	
alpha-BHC	80	4	5.0	0.0007	1.07E-04	Exceed	6.5	
Chlordane	71	1	1.4	0.051	1.92E-03	Exceed	27	
Endrin	102	1	1.0	0.000175	2.00E-03	Not Exceed	0.1	
gamma-BHC (Lindane)	102	13	12.7	0.1479	2.00E-04	Exceed	740	
Methoxychlor	102	1	1.0	0.00032	4.00E-02	Not Exceed	0.0	
Toxaphene	115	13	11.3	0.56	3.00E-03	Exceed	187	
Organophosphorus Pesticides								
Diazinon	14	1	7.1	0.023	1.41E-02	Exceed	1.6	
Chlorinated Herbicides								
2,4,5-TP (Silvex)	102	6	5.9	0.0073	5.00E-02	Not Exceed	0.15	
Bentazon	16	1	6.3	0.00218	NA	NA	NA	Not used on site

Notes:

Default target levels were obtained from Table B-1 in the draft Departmental Missouri Risk-Based Corrective Action Technical Guidance (MDNR, February 2005) and Table 3-1 in the Missouri Risk-Based Corrective Action Process for Petroleum Storage Tanks (MDNR, February 2005).

Values in bold and underlined have DTLs less than practical quantitation limits (PQLs) as per Table B-1 in the draft Departmental MRBCA Technical Guidance.

NA: Not available

Chemical with maximum detected concentration greater than DTL

Chemical without DTL, but used on-site or detected more than 5%

Table 1-4
Organic Chemicals with Maximum Detected Concentrations in Groundwater Less Than DTLs
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Groundwater

Chemicals	Number of Samples	Number of Detects	No. of Detects/No. of Samples (%)	Maximum Detected Conc. (Max) (mg/L)	Default Target Levels (DTLs) (mg/L)	Ratio of Max/DTL
Volatile Organics						
1,2-Dichlorobenzene	114	1	0.9	0.023	6.00E-01	0.04
2-Butanone (MEK)	117	1	0.9	0.026	3.65E+00	0.01
4-Methyl-2-pentanone (MIBK)	114	3	2.6	0.209	9.27E-01	0.23
Carbon disulfide	117	4	3.4	0.489	5.45E-01	0.90
Ethylbenzene	117	28	23.9	0.56	7.00E-01	0.80
Isopropylbenzene	114	20	17.5	0.0365	3.66E-01	0.10
n-Butylbenzene	114	7	6.1	0.0281	1.32E-01	0.21
n-Propylbenzene	114	12	10.5	0.022	1.32E-01	0.17
sec-Butylbenzene	114	7	6.1	0.00415	1.32E-01	0.03
Styrene	114	2	1.8	0.0112	1.00E-01	0.11
Toluene	117	1	0.9	0.0058	1.00E+00	0.01
Xylene, total	117	26	22.2	4.03	1.00E+01	0.40
Semivolatile Organics						
2,4,5-Trichlorophenol	114	1	0.9	0.014	3.30E-01	0.04
Anthracene	114	1	0.9	0.29	9.89E-01	0.29
Benzoic acid	114	2	1.8	0.012	1.32E+01	0.001
Butyl benzyl phthalate	114	1	0.9	1.0	3.13E+00	0.32
Chrysene	114	1	0.9	0.088	9.21E-02	0.96
Di-n-butyl phthalate	117	1	0.9	0.53	1.56E+00	0.34
Fluoranthene	114	1	0.9	0.013	6.26E-01	0.02
Isophorone	114	1	0.9	0.034	1.49E-01	0.23
o-Cresol (2-methylphenol)	113	1	0.9	0.0124	1.65E-01	0.08
Pyrene	114	1	0.9	0.036	4.69E-01	0.08
Chlorinated Pesticides						
4,4-DDT	80	1	1.3	0.00009	1.98E-03	0.05
Endrin	102	1	1.0	0.000175	2.00E-03	0.09
Methoxychlor	102	1	1.0	0.00032	4.00E-02	0.01
Chlorinated Herbicides						
2,4,5-TP (Silvex)	102	6	5.9	0.0073	5.00E-02	0.15

Notes:

Default target levels were obtained from Table B-1 in the draft Departmental Missouri Risk-Based Corrective Action Technical Guidance (MDNR, February 2005) and Table 3-1 in the Missouri Risk-Based Corrective Action Process for Petroleum Storage Tanks (MDNR, February 2005).

Values in bold have ratio greater than 0.8.

Chemical with maximum detected concentration less than DTL, but ratio of Max/DTL or Max/RBTL greater than 0.8

Table 1-5
Summary of Chemicals of Concern Detected in Groundwater
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Groundwater

Chemicals	Number of Samples	Number of Detects	Maximum Detected Conc. (Max) (mg/L)	Default Target Levels (DTLs) (mg/L)	Tier 1 Risk-Based Target Level (RBTL) for Indoor Inhalation Pathway from Groundwater, Non-residential Land Use, Soil Type 2 (Silty) (mg/L)	Ratio of Max/DTL	Ratio of Max/RBTL	Wells Detected
Heavy Metals (Total)								
Arsenic	111	29	0.092	1.00E-02	NA	9.2	NA	1, 2A, 4, 6, 9, 10, 11, 12, 13
Volatile Organics								
1,2,3-Trimethylbenzene	114	19	0.0604	NA	NA	NA	NA	1, 2A, 3, 6, 11
1,2,4-Trimethylbenzene	114	21	0.37	7.10E-03	1.07E+01	52.1	0.03	1, 2A, 3, 4, 6, 11
1,3,5-Trimethylbenzene	114	11	0.037	7.10E-03	7.61E+00	5.2	0.005	1, 2A, 3, 11
Acetone	114	2	4	2.97E+00	2.92E+05	1.3	0.00001	2A, 3
Benzene	114	23	0.013	5.00E-03	5.65E+00	2.6	0.002	1, 2A, 6, 8, 11
Carbon disulfide	117	4	0.489	5.45E-01	1.89E+02	0.9	0.003	2A, 6, 8
Chlorobenzene	114	51	11	5.79E-02	1.78E+02	190	0.06	1, 2A, 3, 5, 6, 7, 8, 9, 11, 12
Ethylbenzene	117	28	0.56	7.00E-01	1.40E+03	0.8	0.0004	1, 2A, 3, 4, 6, 11
Methyl tert-butyl ether (MTBE)	117	5	5.65	1.46E-01	4.59E+03	38.7	0.001	1, 2A, 11
Nitrobenzene	114	1	0.025	1.83E-03	8.11E+02	13.7	0.00003	6
Tetrahydrofuran	69	1	3.75	2.03E-02	1.57E+03	185	0.002	11
Semivolatile Organics								
2,4-Dimethylphenol	114	3	0.078	6.59E-02	3.28E+05	1.2	0.0000002	1, 3, 11
2-Chlorophenol	114	11	0.47	1.65E-02	6.84E+02	28.5	0.001	2A, 6
2-Methylnaphthalene	114	18	0.7	1.32E-02	3.79E+02	53.0	0.002	1, 2A, 3, 6, 11
Acenaphthene	114	1	1.7	1.98E-01	2.44E+04	8.6	0.0001	6
Azobenzene	114	1	0.036	1.30E-03	2.96E+02	27.7	0.0001	6
Benzo(a)anthracene	114	1	0.082	9.21E-04	1.10E+03	89.0	0.0001	6
Bis(2-ethylhexyl)phthalate	117	4	1.6	6.00E-03	2.34E+06	267	0.000001	5, 6, 10
Carbazole	114	1	0.51	7.08E-03	9.97E+04	72.0	0.00001	6
Chrysene	114	1	0.088	9.21E-02	1.01E+04	1.0	0.00001	6
Fluorene	117	1	1.7	1.32E-01	4.53E+04	12.9	0.00004	6
Naphthalene	117	20	1.2	3.55E-03	8.11E+01	338	0.01	1, 2A, 3, 6, 11
Pentachlorophenol	114	6	0.4575	1.00E-03	1.24E+05	458	0.000004	11
Phenanthrene	114	1	0.62	9.89E-02	1.81E+04	6.3	0.00003	6
Chlorinated Pesticides								
alpha-BHC	80	4	0.0007	1.07E-04	6.26E+01	6.5	0.00001	2A, 6, 11
Chlordane	71	1	0.051	1.92E-03	3.56E+02	26.6	0.0001	6
gamma-BHC (Lindane)	102	13	0.1479	2.00E-04	2.85E+02	740	0.001	2A, 8, 11, 13
Toxaphene	115	13	0.56	3.00E-03	7.20E+02	187	0.001	1, 2A, 3, 5, 7, 8, 10, 11
Organophosphorus Pesticides								
Diazinon	14	1	0.023	1.41E-02	8.66E+04	1.6	0.0000003	11
Chlorinated Herbicides								
Bentazon	16	1	0.00218	NA	NA	NA	NA	10

Notes:

Default target levels were obtained from Table B-1 in the draft Departmental Missouri Risk-Based Corrective Action Technical Guidance (MDNR, February 2005) and Table 3-1 in the Missouri Risk-Based Corrective Action Process for Petroleum Storage Tanks (MDN)

Tier 1 risk-based target levels were obtained from Table B-9 in the draft Departmental Missouri Risk-Based Corrective Action Technical Guidance (MDNR, February 2005) and Table 7-2(b) in the Missouri Risk-Based Corrective Action

Values in bold and underlined have DTLs less than practical quantitation limits (PQLs) as per Table B-1 in the draft Departmental MRBCA Technical Guidance

NA: Not available

Chemical with maximum detected concentration greater than DTL.

Chemical without DTL, but detected more than 5%

Chemical with maximum detected concentration less than DTL, but ratio of Max/DTL equal to or greater than 0.8

Table 1-6
Summary of Chemicals Not Detected in Groundwater
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Groundwater

Chemical	Number of Samples	Maximum Detection Limit (Max) (mg/L)	Minimum Detection Limit (Min) (mg/L)	Tier 1 Risk-Based Target Level (RBTL) for Indoor Inhalation Pathway from Groundwater, Non-residential Land Use, Soil Type 2 (Silty) (mg/L)	Exceed/Not Exceed (Max/RBTL)	Exceed/Not Exceed (Min/RBTL)	Remarks
Volatile Organics							
1,1,1,2-Tetrachloroethane	114	0.25	0.001	17.6	Not Exceed	Not Exceed	
1,1,1-Trichloroethane	116	0.25	0.001	1,380	Not Exceed	Not Exceed	
1,1,2,2-Tetrachloroethane	114	0.25	0.001	15	Not Exceed	Not Exceed	
1,1,2-Trichloro-1,2,2-trifluoroethane	114	1	0.001	1,710	Not Exceed	Not Exceed	
1,1,2-Trichloroethane	114	0.25	0.001	19.1	Not Exceed	Not Exceed	
1,1-Dichloro-2-propanone	56	2.5	0.00	NA	NA	NA	Not used on-site
1,1-Dichloroethane	114	0.25	0.001	34.2	Not Exceed	Not Exceed	
1,1-Dichloroethene	114	0.25	0.001	72.3	Not Exceed	Not Exceed	
1,1-Dichloropropene	114	0.25	0.001	NA	NA	NA	Not used on-site
1,2,3-Trichlorobenzene	114	0.25	0.001	NA	NA	NA	Not used on-site
1,2,3-Trichloropropane	114	0.25	0.001	1.54	Not Exceed	Not Exceed	
1,2,4-Trichlorobenzene	114	0.05	0.001	72.3	Not Exceed	Not Exceed	
1,2-Dibromo-3-chloropropane (DBCP)	114	0.25	0.001	1,410	Not Exceed	Not Exceed	
1,2-Dibromoethane (EDB)	114	0.25	0.001	6.21	Not Exceed	Not Exceed	
1,2-Dichloroethane	114	0.25	0.001	8.62	Not Exceed	Not Exceed	
1,2-Dichloropropane	114	0.25	0.001	10.3	Not Exceed	Not Exceed	
1,3-Dichlorobenzene	114	0.05	0.001	19.0	Not Exceed	Not Exceed	
1,3-Dichloropropane	114	0.25	0.001	NA	NA	NA	Not used on-site
1,4-Dichloro-2-butene	3	0.25	0.1	NA	NA	NA	Not used on-site
1,4-Dichlorobenzene	114	0.05	0.001	21.2	Not Exceed	Not Exceed	
1,4-Dioxane	13	5	0.1	2,390	Not Exceed	Not Exceed	
1-Chlorobutane	56	0.25	0.001	NA	NA	NA	Not used on-site
2,2-Dichloropropane	114	0.25	0.001	NA	NA	NA	Not used on-site
2-Chloroethyl vinyl ether	114	2.5	0.01	NA	NA	NA	Not used on-site
2-Chlorotoluene	114	0.25	0.001	244	Not Exceed	Not Exceed	
2-Hexanone	114	2.5	0.00	527	Not Exceed	Not Exceed	
2-Nitropropane	56	2.5	0.00	NA	NA	NA	Not used on-site
4-Chlorotoluene	114	0.25	0.0005	0.95	Not Exceed	Not Exceed	
Acetonitrile	49	5	0.05	9,970	Not Exceed	Not Exceed	
Acrolein	114	5	0.05	1.15	Exceed	Not Exceed	
Acrylonitrile	114	2.5	0.002	21.0	Not Exceed	Not Exceed	
Allyl chloride	114	0.25	0.001	5,800	Not Exceed	Not Exceed	
Bromobenzene	114	0.25	0.001	NA	NA	NA	Not used on-site
Bromochloromethane	114	0.25	0.001	447	Not Exceed	Not Exceed	
Bromodichloromethane	114	0.25	0.001	12.2	Not Exceed	Not Exceed	
Bromoform	114	0.25	0.001	2,420	Not Exceed	Not Exceed	
Bromomethane	114	0.5	0.001	8.78	Not Exceed	Not Exceed	
Butyl acetate	49	1	0.02	NA	NA	NA	Not used on-site
Carbon tetrachloride	114	0.25	0.001	0.67	Not Exceed	Not Exceed	

Table 1-6
Summary of Chemicals Not Detected in Groundwater
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Groundwater

Chemical	Number of Samples	Maximum Detection Limit (Max) (mg/L)	Minimum Detection Limit (Min) (mg/L)	Tier 1 Risk-Based Target Level (RBTL) for Indoor Inhalation Pathway from Groundwater, Non-residential Land Use, Soil Type 2 (Silty) (mg/L)	Exceed/Not Exceed (Max/RBTL)	Exceed/Not Exceed (Min/RBTL)	Remarks
Chloroacetonitrile	4	0.025	0.025	NA	NA	NA	Not used on-site
Chloroethane	114	0.5	0.001	25.7	Not Exceed	Not Exceed	
Chloroform	117	0.25	0.001	2.57	Not Exceed	Not Exceed	
Chloromethane (Methyl chloride)	114	0.5	0.001	5.06	Not Exceed	Not Exceed	
Chloroprene (2-Chloro-1,3-butadiene)	111	2.5	0.02	NA	NA	NA	Not used on-site
cis-1,2-Dichloroethene	114	0.25	0.001	93.6	Not Exceed	Not Exceed	
cis-1,3-Dichloropropene	114	0.25	0.001	NA	NA	NA	Not used on-site
cis-1,4-Dichloro-2-butene	111	1.2	0.005	NA	NA	NA	Not used on-site
Dibromochloromethane (Chlorodibromomethane)	114	0.25	0.001	51.4	Not Exceed	Not Exceed	
Dibromomethane (Methylene bromide)	114	0.25	0.001	NA	NA	NA	Not used on-site
Dichlorodifluoromethane	114	0.5	0.001	21.4	Not Exceed	Not Exceed	
Di-isopropylether	68	0.05	0.001	3,000	Not Exceed	Not Exceed	
Ethyl acetate	52	0.5	0.01	NA	NA	NA	Not used on-site
Ethyl methacrylate	114	0.25	0.001	NA	NA	NA	Not used on-site
Heptane	52	1	0.02	NA	NA	NA	Not used on-site
Hexachlorobutadiene	114	0.05	0.001	1.90	Not Exceed	Not Exceed	
Hexachloroethane	44	1	0.00	274	Not Exceed	Not Exceed	
n-Hexane	65	2.5	0.01	0.48	Exceed	Not Exceed	
Iodomethane	114	0.5	0.005	18.3	Not Exceed	Not Exceed	
Methacrylonitrile	114	2.5	0.00	NA	NA	NA	Not used on-site
Methyl methacrylate	114	0.25	0.001	NA	NA	NA	Not used on-site
Methylacrylate	56	0.5	0.01	NA	NA	NA	Not used on-site
Methylene chloride	117	0.25	0.005	214	Not Exceed	Not Exceed	
Pentachloroethane	114	1	0.001	NA	NA	NA	Not used on-site
p-Isopropyltoluene	112	0.25	0.001	1,350	Not Exceed	Not Exceed	
Propionitrile	114	2.5	0.02	NA	NA	NA	Not used on-site
tert-Butylbenzene	114	0.25	0.001	128	Not Exceed	Not Exceed	
Tetrachloroethene	114	0.25	0.001	6.25	Not Exceed	Not Exceed	
trans-1,2-Dichloroethene	114	0.25	0.001	86.8	Not Exceed	Not Exceed	
trans-1,3-Dichloropropene	114	0.25	0.001	NA	NA	NA	Not used on-site
trans-1,4-Dichloro-2-butene	111	0.5	0.001	NA	NA	NA	Not used on-site
Trichloroethene	114	0.25	0.001	14.3	Not Exceed	Not Exceed	
Trichlorofluoromethane	114	0.25	0.001	71.3	Not Exceed	Not Exceed	
Vinyl acetate	114	0.5	0.01	NA	NA	NA	Not used on-site
Vinyl chloride	114	0.1	0.001	0.959	Not Exceed	Not Exceed	
Semivolatile Organics							
2,4,6-Trichlorophenol	114	0.1	0.01	948	Not Exceed	Not Exceed	
2,4-Dichlorophenol	114	0.2	0.01	51,400	Not Exceed	Not Exceed	
2,4-Dinitrophenol	114	0.5	0.01	89,400	Not Exceed	Not Exceed	

Table 1-6
Summary of Chemicals Not Detected in Groundwater
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Groundwater

Chemical	Number of Samples	Maximum Detection Limit (Max) (mg/L)	Minimum Detection Limit (Min) (mg/L)	Tier 1 Risk-Based Target Level (RBTL) for Indoor Inhalation Pathway from Groundwater, Non-residential Land Use, Soil Type 2 (Silty) (mg/L)	Exceed/Not Exceed (Max/RBTL)	Exceed/Not Exceed (Min/RBTL)	Remarks
2,4-Dinitrotoluene	114	0.1	0.01	4,310	Not Exceed	Not Exceed	
2,6-Dinitrotoluene	114	0.1	0.01	1,760	Not Exceed	Not Exceed	
2-Chloronaphthalene	114	0.1	0.01	26,800	Not Exceed	Not Exceed	
2-Methoxy-4-methylpheno	56	0.2	0.01	NA	NA	NA	Not used on-site
2-Nitroaniline	114	0.5	0.01	1,120	Not Exceed	Not Exceed	
2-Nitrophenol	114	0.2	0.01	37,400	Not Exceed	Not Exceed	
3,3'-Dichlorobenzidine	114	0.1	0.01	1,760	Not Exceed	Not Exceed	
3-Nitroaniline	114	0.5	0.01	16,800	Not Exceed	Not Exceed	
4,6-Dinitro-2-methylphenol	114	0.5	0.01	5,980	Not Exceed	Not Exceed	
4-Bromophenyl phenyl ether	114	0.1	0.01	1.16	Not Exceed	Not Exceed	
4-Chloroaniline	101	0.2	0.01	155,000	Not Exceed	Not Exceed	
4-Chlorophenyl phenyl ether	114	0.1	0.01	0.418	Not Exceed	Not Exceed	
4-Nitroaniline	114	0.2	0.01	67,700	Not Exceed	Not Exceed	
4-Nitrophenol	114	0.1	0.01	16,800	Not Exceed	Not Exceed	
Acenaphthylene	114	0.1	0.01	31,300	Not Exceed	Not Exceed	
Aniline	114	0.2	0.01	5,330	Not Exceed	Not Exceed	
Benzidine	114	0.2	0.01	4.56	Not Exceed	Not Exceed	
Benzo(a)pyrene	114	0.1	0.01	128	Not Exceed	Not Exceed	
Benzo(b)fluoranthene	114	0.1	0.01	94.8	Not Exceed	Not Exceed	
Benzo(g,h,i)perylene	114	0.1	0.01	264,000	Not Exceed	Not Exceed	
Benzo(k)fluoranthene	114	0.1	0.01	50,200	Not Exceed	Not Exceed	
Benzyl alcohol	114	0.2	0.01	10,900,000	Not Exceed	Not Exceed	
Bis(2-chloroethoxy)methane	114	0.1	0.01	NA	NA	NA	Not used on-site
Bis(2-chloroethyl)ether	114	0.1	0.01	50.3	Not Exceed	Not Exceed	
Bis(2-chloroisopropyl)ether	114	0.1	0.01	301	Not Exceed	Not Exceed	
Dibenzo(a,h)anthracene	114	0.1	0.01	877	Not Exceed	Not Exceed	
Dibenzofuran	114	0.1	0.01	831	Not Exceed	Not Exceed	
Diethyl phthalate	114	0.1	0.01	47,600,000	Not Exceed	Not Exceed	
Dimethyl phthalate	114	0.1	0.01	684,000,000	Not Exceed	Not Exceed	
Di-n-octyl phthalate	114	0.1	0.01	104,000	Not Exceed	Not Exceed	
Hexachlorobenzene	114	0.1	0.01	0.67	Not Exceed	Not Exceed	
Hexachlorocyclopentadiene	114	0.1	0.005	0.379	Not Exceed	Not Exceed	
Hexachloroethane	114	0.1	0.01	274	Not Exceed	Not Exceed	
Indeno(1,2,3-cd)pyrene	114	0.1	0.01	3,180	Not Exceed	Not Exceed	
m,p-Cresol (3,4-Methylphenol)	65	0.2	0.01	NA	NA	NA	
m-Cresol (3-Methylphenol)	26	0.01	0.01	1,140,000	Not Exceed	Not Exceed	
N-Nitrosodimethylamine	114	0.2	0.01	5.17	Not Exceed	Not Exceed	
N-Nitroso-di-n-propylamine	114	0.1	0.01	63.7	Not Exceed	Not Exceed	
N-Nitrosodiphenylamine	114	0.1	0.01	43,700	Not Exceed	Not Exceed	
p-Cresol (4-Methylphenol)	51	0.01	0.01	105,000	Not Exceed	Not Exceed	

Table 1-6
Summary of Chemicals Not Detected in Groundwater
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Groundwater

Chemical	Number of Samples	Maximum Detection Limit (Max) (mg/L)	Minimum Detection Limit (Min) (mg/L)	Tier 1 Risk-Based Target Level (RBTL) for Indoor Inhalation Pathway from Groundwater, Non-residential Land Use, Soil Type 2 (Silty) (mg/L)	Exceed/Not Exceed (Max/RBTL)	Exceed/Not Exceed (Min/RBTL)	Remarks
Phenol	117	0.050	0.005	1,890,000	Not Exceed	Not Exceed	
Pyridine	114	0.2	0.01	NA	NA	NA	Not used on-site
Chlorinated Pesticides							
4,4-DDD	80	0.0055	0.00005	3,350	Not Exceed	Not Exceed	
4,4-DDE	80	0.0025	0.00005	657	Not Exceed	Not Exceed	
Aldrin	80	0.0025	0.00005	1.92	Not Exceed	Not Exceed	
beta-BHC	80	0.003	0.00005	823	Not Exceed	Not Exceed	
alpha-Chloradane	14	0.01	0.0005	NA	NA	NA	Not used on-site
delta-BHC	80	0.0045	0.00005	807	Not Exceed	Not Exceed	
Dieldrin	80	0.0025	0.00005	21.7	Not Exceed	Not Exceed	
Endosulfan I	80	0.007	0.00005	NA	NA	NA	Not used on-site
Endosulfan II	80	0.0025	0.00005	NA	NA	NA	Not used on-site
Endosulfan sulfate	80	0.033	0.00005	NA	NA	NA	Not used on-site
Endrin aldehyde	80	0.0115	0.00005	61.8	Not Exceed	Not Exceed	
Endrin ketone	78	0.005	0.00005	1,490	Not Exceed	Not Exceed	
gamma-Chloradane	14	0.01	0.0005	NA	NA	NA	Not used on-site
Heptachlor	80	0.002	0.00005	0.00112	Exceed	Not Exceed	
Heptachlor epoxide	80	0.0415	0.00005	55.4	Not Exceed	Not Exceed	
Organophosphorus Pesticides							
Azinphos-methyl (Guthion)	14	0.0020	0.0001	259,000	Not Exceed	Not Exceed	
Bolstar (Sulprofos)	14	0.0015	0.0001	NA	NA	NA	Not used on-site
Chlorpyrifos	14	0.0015	0.0001	47,200	Not Exceed	Not Exceed	
Coumaphos	14	0.002	0.0005	734,000	Not Exceed	Not Exceed	
Demeton, -O and -S	13	0.004	0.002	14.4	Not Exceed	Not Exceed	
Dichlorvos	14	0.0042	0.0001	NA	NA	NA	Not used on-site
Dimethoate	13	0.002	0.001	13,000	Not Exceed	Not Exceed	
Disulfoton	14	0.0015	0.0001	295	Not Exceed	Not Exceed	
EPN	13	0.00084	0.00042	NA	NA	NA	Not used on-site
Ethoprop	14	0.002	0.0001	7,410	Not Exceed	Not Exceed	
Ethyl parathion	13	0.002	0.001	397,000	Not Exceed	Not Exceed	
Fensulfothion	14	0.0017	0.0001	NA	NA	NA	Not used on-site
Fenathion	14	0.0017	0.0001	3,650	Not Exceed	Not Exceed	
Malathion	102	0.01	0.0010	2,280,000	Not Exceed	Not Exceed	
Merphos	14	0.002	0.0001	NA	NA	NA	Not used on-site
Methyl parathion	14	0.0012	0.0001	13,300	Not Exceed	Not Exceed	
Mevinphos	14	0.002	0.0001	NA	NA	NA	Not used on-site
Naled	14	0.0042	0.0005	92,400	Not Exceed	Not Exceed	
Phorate	14	0.00084	0.0001	1,060	Not Exceed	Not Exceed	
Ronnel	14	0.0015	0.0001	NA	NA	NA	Not used for 20 yrs

Table 1-6
Summary of Chemicals Not Detected in Groundwater
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Groundwater

Chemical	Number of Samples	Maximum Detection Limit (Max) (mg/L)	Minimum Detection Limit (Min) (mg/L)	Tier 1 Risk-Based Target Level (RBTL) for Indoor Inhalation Pathway from Groundwater, Non-residential Land Use, Soil Type 2 (Silty) (mg/L)	Exceed/Not Exceed (Max/RBTL)	Exceed/Not Exceed (Min/RBTL)	Remarks
Stirophos	13	0.002	0.001	NA	NA	NA	Used on-site
Sulfotep	13	0.0015	0.00073	NA	NA	NA	Not used on-site
TEPP	13	0.017	0.00830	NA	NA	NA	Not used on-site
Tokuthion (Prothothiofos)	13	0.0015	0.00073	NA	NA	NA	Not used on-site
Trichloronate	13	0.0017	0.00083	NA	NA	NA	Not used on-site
Chlorinated Herbicides							
2,4,5-T	80	0.008	0.00016	625,000	Not Exceed	Not Exceed	
2,4-D	102	0.002	0.00016	769,000	Not Exceed	Not Exceed	
2,4-DB	80	0.002	0.00016	662,000	Not Exceed	Not Exceed	
3,5-Dichlorobenzoic acid	16	0.00025	0.00016	NA	NA	NA	Not used on-site
Acifluorfen	16	0.0044	0.00016	23,800,000	Not Exceed	Not Exceed	
Dalapon	80	0.002	0.001	1,600,000	Not Exceed	Not Exceed	
Dicamba	80	0.002	0.00016	2,270,000	Not Exceed	Not Exceed	
Dichlorprop	80	0.002	0.00016	768,000	Not Exceed	Not Exceed	
Dinoseb	80	0.002	0.00016	61,900	Not Exceed	Not Exceed	
MCPA	80	0.050	0.00016	37,300	Not Exceed	Not Exceed	
MCPP	80	0.050	0.00016	77,300	Not Exceed	Not Exceed	
Picloram	16	0.00025	0.00016	0.95	Not Exceed	Not Exceed	

Notes:

Tier 1 RBTLs were obtained from Table B-9 in the draft Departmental Missouri Risk-Based Corrective Action Technical Guidance (MDNR, February 2005) and Table 7-2(b) in the Missouri Risk-Based Corrective Action Process for Petroleum Storage Tanks (MDNR, February 2005).

NA: Not available

Chemical with maximum detection limit or minimum detection limit greater than Tier 1 RBTL

Chemical without Tier 1 RBTL, but used on-site

Table 1-7
Chemicals of Concern in Groundwater
PM Resources, Inc., Bridgeton, Missouri

Parameter	Number of Samples	Number of Detects	Maximum Detected Conc. (Max) (mg/L)	Default Target Levels (DTLs) (mg/L)	Wells Detected
Metals (total)					
Arsenic	111	29	0.092	0.01	1, 2A, 4, 6, 9, 10, 11, 12, 13
Volatiles (total)					
1,2,3-Trimethylbenzene	114	19	0.0604	NA	1, 2A, 3, 6, 11
1,2,4-Trimethylbenzene	114	21	0.37	0.0071	1, 2A, 3, 4, 6, 11
1,3,5-Trimethylbenzene	114	11	0.037	0.0071	1, 2A, 3, 11
Acetone	114	2	4	2.97	2A, 3
Benzene	114	23	0.013	0.005	1, 2A, 6, 8, 11
Carbon disulfide	117	4	0.489	0.545	2A, 6, 8
Chlorobenzene	114	51	11	0.0579	1, 2A, 3, 5, 6, 7, 8, 9, 11, 12
Ethylbenzene	117	28	0.56	0.7	1, 2A, 3, 4, 6, 11
Methyl tert-butyl ether (MTBE)	117	5	5.65	0.146	1, 2A, 11
Nitrobenzene	114	1	0.025	0.00183	6
Tetrahydrofuran	69	1	3.75	0.0203	11
Semi-Volatile Compounds (total)					
2,4-Dimethylphenol	114	3	0.078	0.0659	1, 3, 11
2-Chlorophenol	114	11	0.47	0.0165	2A, 6
2-Methylnaphthalene	114	18	0.7	0.0132	1, 2A, 3, 6, 11
Acenaphthene	114	1	1.7	0.198	6
Azobenzene	114	1	0.036	0.0013	6
Benzo(a)anthracene	114	1	0.082	0.000921	6
Bis(2-ethylhexyl)phthalate	117	4	1.6	0.006	5, 6, 10
Carbazole	114	1	0.51	0.00708	6
Chrysene	114	1	0.088	0.0921	6
Fluorene	117	1	1.7	0.132	6
Naphthalene	117	20	1.20125	0.00355	1, 2A, 3, 6, 11
Pentachlorophenol	114	6	0.4575	0.001	11
Phenanthrene	114	1	0.62	0.0989	6
Pesticides (total)					
alpha-BHC	80	4	0.0007	0.000107	2A, 6, 11
Chlordane	71	1	0.051	0.00192	6
Diazinon	14	1	0.023	0.0141	11
gamma-BHC (Lindane)	102	13	0.1479	0.0002	2A, 8, 11, 13
Stirophos	13	0	NA	NA	NA
Toxaphene	115	13	0.56	0.003	1, 2A, 3, 5, 7, 8, 10, 11
Chlorinated Herbicides					
Bentazon	16	1	0.00218	NA	10

FIGURES

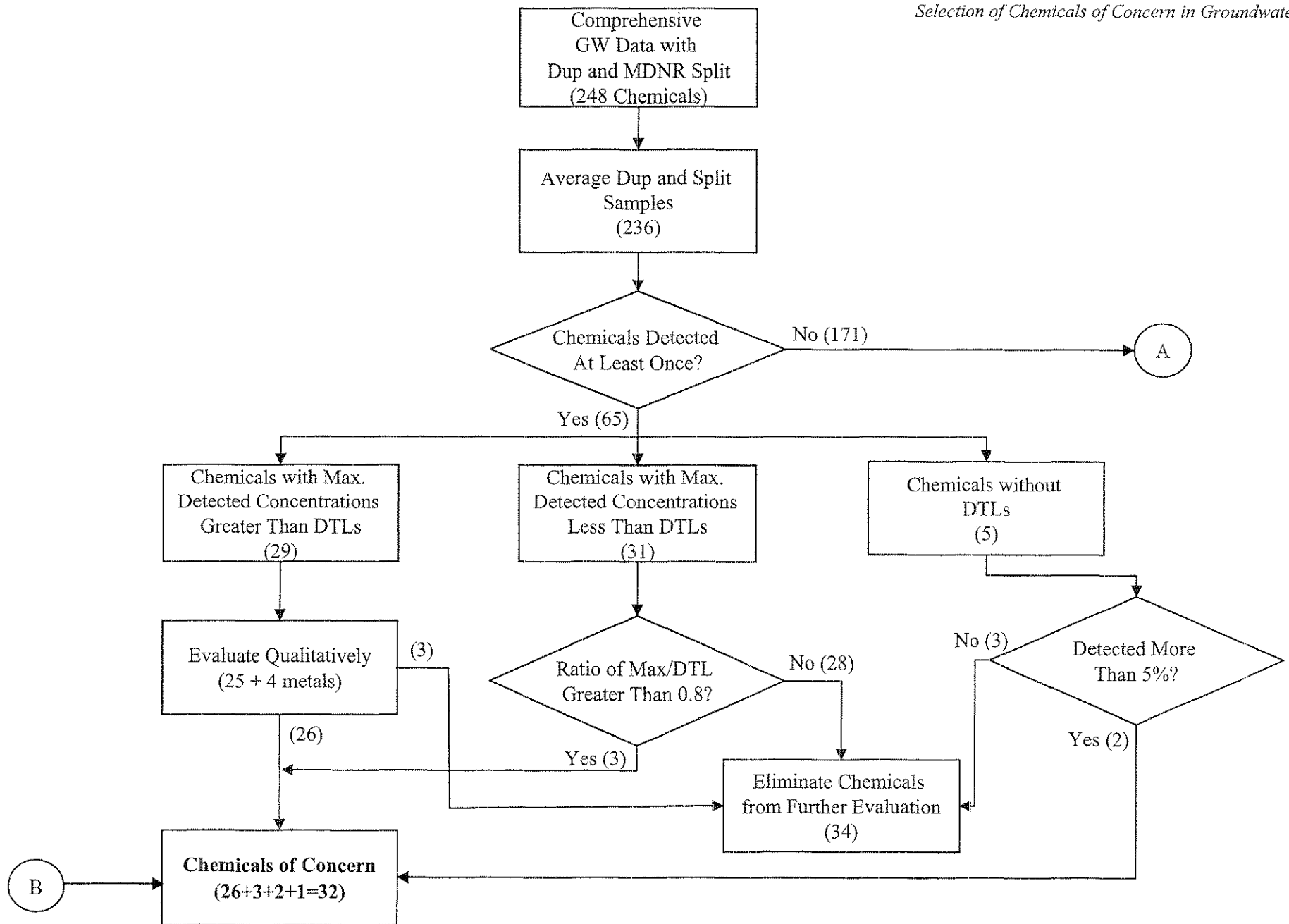
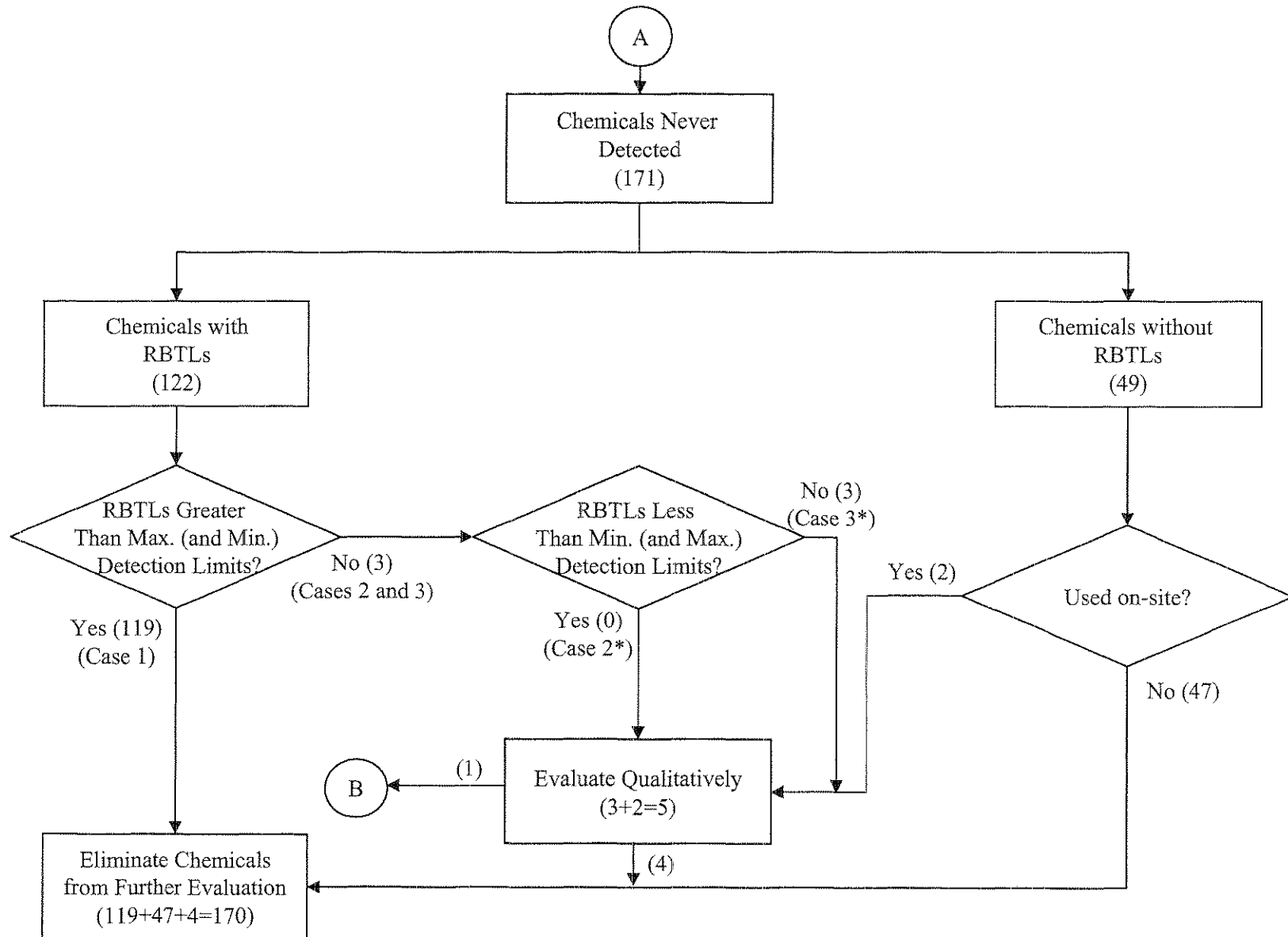


Figure 1-1. Flowchart for Selection of Chemicals of Concern in Groundwater (Page 1 of 2)



*: Factors to be considered in the qualitative evaluation are different.

Figure 1-1. Flowchart for Selection of Chemicals of Concern in Groundwater (Page 2 of 2)

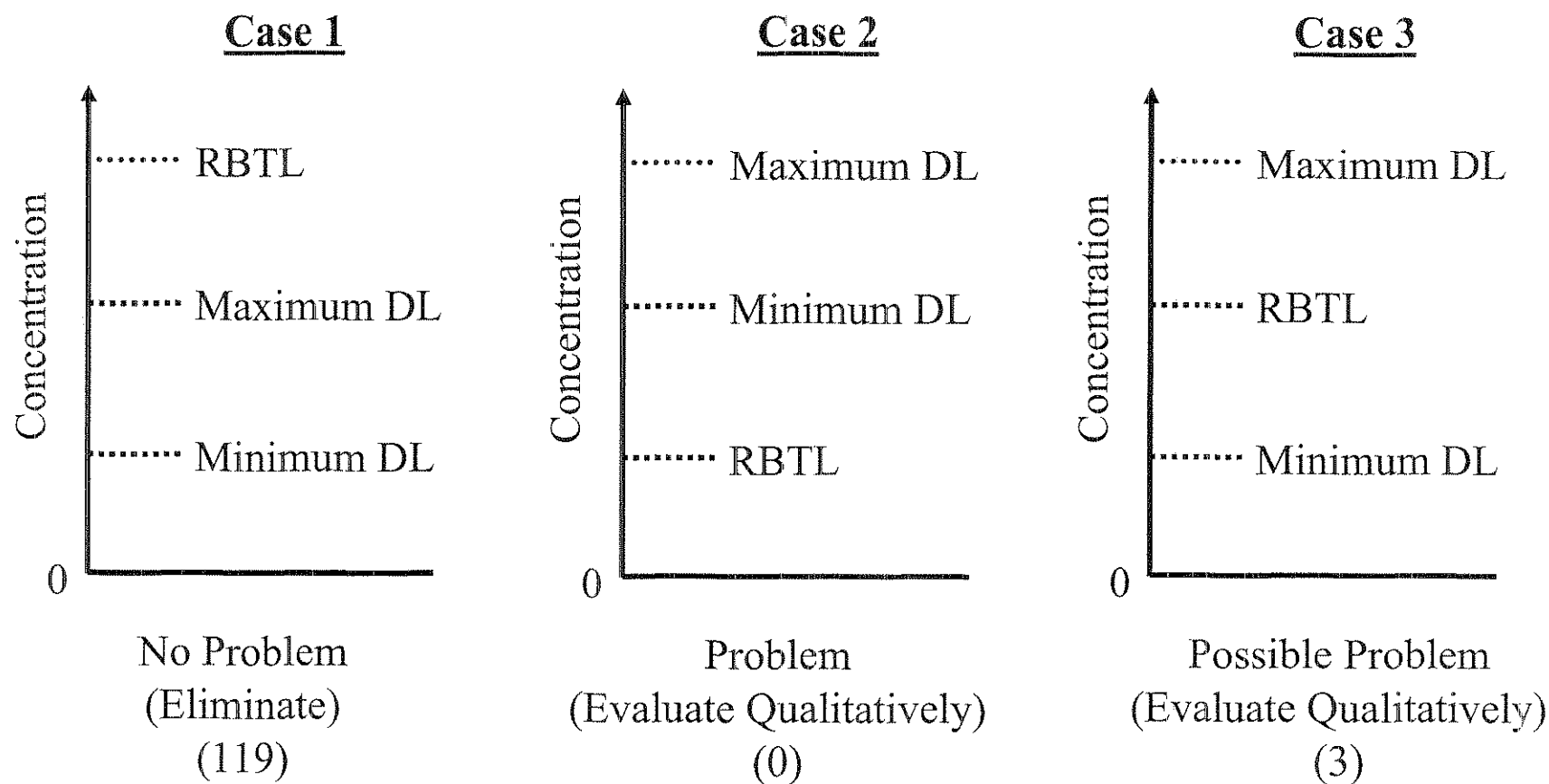


Figure 1-2. Relationship Between RBTL and Detection Limit for PM Resources Groundwater Data

SELECTION OF CHEMICALS OF CONCERN IN SOIL
(Part 2)

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Figure 2-1	Flowchart for Selection of Chemicals of Concern in Soil
Figure 2-2	Relationship Between RBTL and Detection Limit for PM Resources Soil Data

SELECTION OF CHEMICALS OF CONCERN IN SOIL

1.0 INVENTORY OF SOIL DATA

1.1 Soil Data

The PM Resources soil data consists of soil data collected and analyzed from the following borings:

Year	Borings	No. of Borings	No. of Samples
October 1987	Lot-1, N.E.-2, N.W.-3 and BG-4	4	4
April 1988	SS1 through SS8	8	8
September 1994	TS1 through TS4	4	4
January 1995	Beneath Excavation and B1 through B11	12	22
June 1997	B-1 through B-4	4	4
February 1998	B-5 and B-6	2	2
April 1998	BC1 through BC6	6	7
February 1999	B12 through B19, B20a, B20c, B20d, B21b, B22, B23a, MW1, and MW3	16	37*
August 1999	B24 through B35	12	34
June 2000	B1 Spill and B2 Spill	0	2
August 2000	B36 through B42 and MW4 through MW13	17	51
October 2000	Ditch soil	0	1

Note:

1. Beneath Excavation is composite of two samples; 1-1.5 feet below UST excavation and 1-1.5 feet below spill catchment drain pit. Therefore, this sample data was not included in the risk assessment.
2. * These samples include 5 split samples analyzed by MDNR during the February 1999 sampling event.

The above data includes a total of 176 samples from 85 borings and 3 surface soil samples.

The frequency of soil samples collected per boring is as follows:

Borings	No. of Borings	Samples per Boring
Lot-1, N.E.-2, N.W.-3 and BG-4, SS1 through SS8, TS1 through TS4, Beneath Excavation, B1, B-1 through B-4, B-5, B-6, BC1, BC3 through BC6, B14, B15, B20a, B20d, B21b, B22, B23a, B1 Spill*, B2 Spill*, and Ditch soil*	36+3*	1
B2 through B11, B20c, BC2, B28, B29, and MW9 through MW11	17	2
B13, B16 through B18, B24 through B27, B30 through B42, MW1, MW3, MW5 through MW7, MW12, and MW13	28	3
MW8	1	4
B12, B19, and MW4	3	5

Note:

* Surface soil samples

Some of the soil samples were either not named in the reports or the names were repeated, hence to avoid ambiguity, in the above tables, we assigned the following names:

- (i) 8 samples collected in April 1988 were named as SS1 through SS8;
- (ii) 4 samples collected in September 1994 were named as TS1 through TS4;
- (iii) 6 samples collected in April 1998 were renamed from B1 through B6 to BC1 through BC6; and
- (iv) 2 samples collected in June 2000 were renamed from B1 and B2 to B1 Spill and B2 Spill.

1.2 Soil TCLP Data

Soil TCLP data includes data for borings Beneath Excavation collected in January 1995; B-1 through B-4 collected in June 1997; and B-5 and B-6 collected in February 1998. The TCLP data are in milligrams per liter (mg/L). Barium, ethylbenzene, and xylenes were detected. These detected concentrations were compared with groundwater DTLs and none exceeded the DTLs.

1.3 MDNR Split Duplicate Data

Table 2-1 presents the MDNR split data and the PM Resources data. Five split samples were analyzed by MDNR during the February 1999 sampling event;

- MDNR B12 at a depth of 0-2 feet and 8-10 feet,
- MDNR B19 at a depth of 4-5 feet and 11-12 feet, and
- MDNR B20c at a depth of 5-6 feet.

Note since soils are not completely homogeneous, the split soil samples are likely to show higher variability than split groundwater samples. Table below shows the various depths (ft bgs) at which the soil split samples were collected.

Boring	B12			B19			B20c
MDNR	0-2	NS	8-10	NS	4-5	11-12	5-6
PM Resources	0-1	4-5	9-10	0-1	4-5	10-12	5-6

NS: Not sampled

1.4 Comprehensive Soil Database

Using the entire soil data discussed above except for soil TCLP data and soil sample Beneath Excavation, a comprehensive soil database was developed with the following considerations:

Samples with duplicates in PM Resources Data and/or MDNR Split Data were treated as below:

- If a chemical was detected in either or both the samples, the concentrations were averaged and one-half the detection limit was used for the non-detected value.
- If a chemical was analyzed in only one sample and if detected, the detected value was used. If not detected, then conservatively its detection limit was used.
- If the chemical was not detected in either sample, the lower of the two detection limits was used.

Chemicals detected by both VOC and SVOC methods: As in the case of groundwater samples, there are eight chemicals that have been analyzed using VOC and SVOC methods in the same sample: 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, hexachlorobutadiene, hexachloroethane, naphthalene, and nitrobenzene. Discussion with laboratories indicated that for these chemicals both the methods are appropriate and none is superior to the other. These eight chemicals were treated as follows:

- If a chemical was detected by either or both the methods, the concentrations were averaged and one-half the detection limit was used for the non-detected value.
- If the chemical was not detected by either method, the lower of the two detection limits was used.

2.0 PROCESS FOR SELECTION OF CHEMICALS OF CONCERN

There are 193 different chemicals analyzed in the following 7 chemical groups:

- 8 Metals (total),
- 23 Pesticides (total)
- 1 Organophosphorus pesticide,
- 2 Chlorinated herbicides,

- 67 Semi-volatile organic compounds,
- 89 Volatile organic compounds, and
- 3 Miscellaneous analysis.

A flowchart showing the process for selection of chemicals of concern in soil is presented in Figure 2-1. Of the 193 chemicals, 146 chemicals were never detected and the remaining 47 chemicals including TPH were detected in at least one sample.

3.0 CONSIDERATION OF CHEMICALS DETECTED

For the 47 chemicals, Table 2-2 presents the comparison of maximum detected concentrations with the soil default target levels (DLTs). This process is described in Section 2.2.3 beginning on Page 2-3 of the draft MRBCA Technical Guidance document (MDNR, 2005). Based on the comparison, the following observations were made:

- The maximum detected concentrations for 17 chemicals exceeded DTLs.
- The maximum detected concentrations for 25 chemicals did not exceed DTLs.
- 5 chemicals do not have DTLs because these chemicals are not included in draft MRBCA Technical Guidance document (MDNR, 2005).

Of the 17 chemicals for which the maximum concentration exceeded the DTL, five were metals namely arsenic, cadmium, lead, mercury, and selenium. These are further evaluated because metals are naturally occurring chemicals and they may not be site related. Table 2-3 presents the comparison of metal concentrations in soil with the background metal concentrations and is discussed below.

The metal concentrations were evaluated by comparing the maximum detected concentration for each metal in soil to the published background average and background range of concentration levels in Table 2 of the “*Geography of Soil Geochemistry of Missouri Agricultural Soils*”, by Ronald R. Tidball, Geological Survey Professional Paper 954-H, dated 1984. This comparison was made to determine if the metals are present in soils above the published background levels.

Arsenic: The maximum detected concentration (47.1 mg/kg) is above the background geometric mean of 8.7 mg/kg, but is within the range of background concentrations observed (2.5-72 mg/kg). Therefore, arsenic was eliminated.

Cadmium: The maximum detected concentration (15.6 mg/kg) exceeds both the geometric mean (<1 mg/kg) and the observed range (<1-11 mg/kg). Therefore, cadmium was retained as a COC.

Lead: The maximum detected concentration (653 mg/kg) exceeds the geometric mean (20 mg/kg), but is within the observed range (10-7,000 mg/kg). Therefore, lead was eliminated.

Mercury: The maximum detected concentration (0.11 mg/kg) exceeds the geometric mean (0.039 mg/kg), but is within the observed range (<0.01-0.8 mg/kg). Therefore, mercury was eliminated.

Selenium: The maximum detected concentration (5.3 mg/kg) exceeds both the geometric mean (0.28 mg/kg), and the observed range (0.1-2.7 mg/kg). Therefore, selenium was retained as a COC.

The 11 organic chemicals for which the maximum detected concentrations exceeded the DTL were retained as COCs.

For the 25 chemicals for which the maximum detected concentrations did not exceed DTLs, the ratio of maximum detected concentrations to DTLs for the organic chemicals (23) is presented in Table 2-4. Of these 23 organic chemicals, 2 chemicals were within 20% of DTLs and were conservatively retained as COCs. The remaining 21 organic chemicals were eliminated. The 2 metals were eliminated.

Of the 5 chemicals without DTLs,

- 1 chemical was used on-site but detected in less than 5% of total number samples; thus this chemical was eliminated.
- TPH was not included in the risk assessment because it is not associated with site.
- 3 chemicals were not used on-site and were eliminated.

Of the 47 chemicals detected, a total of 15 have been retained and are presented in Table 2-5.

4.0 CONSIDERATION OF CHEMICALS NEVER DETECTED

For the 146 chemicals never detected, maximum and minimum detection limits were compared to Tier 1 RBTLs and presented in Table 2-6. Based on this comparison the following observations were made:

- 31 chemicals do not have Tier 1 RBTLs, and
- For the remaining 115 chemicals, the maximum and minimum detection limits were compared to Tier 1 RBTLs.

The 31 chemicals without Tier 1 RBTLs are discussed below.

- 1 chemical (n-butanol) was used on-site and was evaluated qualitatively. Total of 6 samples were analyzed from soil borings B1 to B4 collected in June 1997 and from soil borings B5 and B6 collected in February 1998. Detection limits for all 6 samples were 1 mg/kg. This chemical was retained as a COC.
- 30 chemicals were not used on-site and were eliminated.

For 115 chemicals with RBTLs, three possible cases were identified and are presented in Figure 2-2. These cases are discussed below:

Case 1: RBTL exceeded the maximum detection limit. 108 chemicals met this criterion and are not included as COCs.

Case 2: RBTL less than minimum detection limit. 2 chemicals (benzidine and n-nitrosodimethylamine) met this criterion. These chemicals had maximum and minimum detection limits greater than the Tier 1 RBTLs and are discussed below:

Benzidine:

- Total of 60 samples were analyzed.
- 1 sample had maximum detection limit of 3.3 mg/kg (B18, 0 – 0.5 ft, 2/99).
- Tier 1 RBTL (0.0218 mg/kg) is less than practical quantitation limits (PQLs) as per the draft Departmental MRBCA Technical Guidance.

Therefore, this chemical is not included as a COC.

n-Nitrosodimethylamine:

- Total of 64 samples were analyzed.
- 1 sample had maximum detection limit of 3.3 mg/kg (B18, 0 – 0.5 ft, 2/99).
- Tier 1 RBTL (0.0889 mg/kg) is less than practical quantitation limits (PQLs) as per the draft Departmental MRBCA Technical Guidance.

Therefore, this chemical is not included as a COC.

Case 3: RBTL between maximum detection limit and minimum detection limit. 5 chemicals (4-bromophenyl-phenylether, 4-chlorophenyl-phenylether, aniline, dibenzo(a,h)anthracene, and n-nitrosodi-n-propylamine) met this criterion. These chemicals had maximum detection limits greater than the Tier 1 RBTLs and are discussed below:

4-Bromophenyl-phenylether:

- Total of 64 samples were analyzed.
- 1 sample had maximum detection limit of 1.65 mg/kg (B18, 0 – 0.5 ft, 2/99).
- 5 samples had detection limits less than Tier 1 RBTL (0.329 mg/kg).
- Tier 1 RBTL is less than practical quantitation limits (PQLs) as per the draft Departmental MRBCA Technical Guidance.

Therefore, this chemical is not included as a COC.

4-Chlorophenyl-phenylether:

- Total of 64 samples were analyzed.
- 1 sample had maximum detection limit of 1.65 mg/kg (B18, 0 – 0.5 ft, 2/99).
- 5 samples had detection limits less than Tier 1 RBTL (0.324 mg/kg).
- Tier 1 RBTL is less than practical quantitation limits (PQLs) as per the draft Departmental MRBCA Technical Guidance.

Therefore, this chemical is not included as a COC.

Aniline:

- Total of 60 samples were analyzed.
- 2 samples had maximum detection limit of 495 mg/kg (MW7, 0 – 2 ft and 16 ft, 9/00).
- 63 samples had detection limits less than Tier 1 RBTL (169 mg/kg).

Therefore, this chemical is not included as a COC.

Dibenzo(a,h)anthracene:

- Total of 64 samples were analyzed.
- 1 sample had maximum detection limit of 1.65 mg/kg (B18, 0 – 0.5 ft, 2/99).
- 20 samples had detection limits greater than Tier 1 RBTL (0.55 mg/kg) but close to Tier 1 RBTL.
- 23 samples had detection limits less than Tier 1 RBTL.

Therefore, this chemical is not included as a COC.

n-Nitrosodi-n-propylamine:

- Total of 52 samples were analyzed.
- 1 sample had maximum detection limit of 1.65 mg/kg (B18, 0 – 0.5 ft, 2/99).
- 59 samples had detection limits less than Tier 1 RBTL (0.667 mg/kg).

Therefore, this chemical is not included as a COC.

Of the 146 chemicals never detected, only 1 chemical has been retained.

5.0 CONCLUSION

As discussed above, the COCs for soil were determined based on the following factors:

- Comparison of maximum detected concentrations with DTLs.
- Comparison of maximum detection limits with RBTLs.
- Consideration of whether the chemical was used on-site and frequency of detection.

Table 2-7 lists the COCs. Of the 193 chemicals in soil samples, a total of 16 chemicals have been retained as COCs.

6.0 COMPREHENSIVE CHEMICALS OF CONCERN IN SOIL AND GROUNDWATER

Table 2-8 presents the chemicals of concern in soil and groundwater.

7.0 REFERENCES

Departmental Missouri Risk-Based Corrective Action Technical Guidance. MDNR, February 2005.

Geography of Soil Geochemistry of Missouri Agricultural Soils. Ronald R. Tidball, Geological Survey Professional Paper 954-H, 1984.

TABLES

Table 2-1
Comparison of PM Resources and MDNR Split Data for Soil
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Soil

PARAMETER	B12	MDNR B12	B12	MDNR B12	B19	MDNR B19	B19	MDNR B19	B20c	MDNR B20c
Date	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99
Depth (ft)	0-1	0-2	9-10	8-10	4-5	4-5	10-12	11-12	5-6	5-6
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Metals (total)										
Arsenic									<4.0	
Barium									92.1	
Cadmium									0.2	
Chromium									8.9	
Lead									7.2	
Mercury									0.04	
Selenium										
Silver										
Pesticides (total)										
4,4-DDD		<0.125		<0.125		<0.125		<0.125		<0.125
4,4-DDE		<0.125		<0.125		<0.125		<0.125		<0.125
4,4-DDT		<0.125		<0.125		<0.125		<0.125		<0.125
Aldrin		<0.125		<0.125		<0.125		<0.125		<0.125
alpha-BHC		<0.125		<0.125		<0.125		<0.125		<0.125
alpha-Chlordane										
beta-BHC		<0.125		<0.125		<0.125		<0.125		<0.125
Chlordane		<0.125		<0.125		<0.125		<0.125		<0.125
delta-BHC		<0.125		<0.125		<0.125		<0.125		<0.125
Dieldrin		<0.125		<0.125		<0.125		<0.125		<0.125
Endosulfan I		<0.125		<0.125		<0.125		<0.125		<0.125
Endosulfan II		<0.125		<0.125		<0.125		<0.125		<0.125
Endosulfan sulfate		<0.125		<0.125		<0.125		<0.125		<0.125
Endrin		<0.125		<0.125		<0.125		<0.125	<0.0017	<0.125
Endrin aldehyde		<0.125		<0.125		<0.125		<0.125		<0.125
Endrin ketone										
gamma BHC (Lindane)		<0.125		<0.125		<0.125		<0.125	<0.0017	<0.125
gamma-Chlordane										
Heptachlor		<0.125		<0.125		<0.125		<0.125		<0.125
Heptachlor epoxide		<0.125		<0.125		<0.125		<0.125		<0.125
Methoxychlor		<0.125		<0.125		<0.125		<0.125	<0.0033	<0.125
Toxaphene	0.063	<0.125	0.035	<0.125	< 0.016	<0.125	< 0.017	<0.125	<0.0166	<0.125
Trifluralin		<0.125		<0.125		<0.125		<0.125		<0.125
Organophosphorus Pesticides (total)										
Malathion									<0.0055	
Chlorinated Herbicides										
2,4,5-TP (Silvex)									<0.0113	
2,4-D									<0.0096	
Semi-Volatile Compounds (total)										
1,2,4-Trichlorobenzene	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1
1,2-Dichlorobenzene	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1

Table 2-1
Comparison of PM Resources and MDNR Split Data for Soil
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Soil

PARAMETER	B12	MDNR B12	B12	MDNR B12	B19	MDNR B19	B19	MDNR B19	B20c	MDNR B20c
Date	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99
Depth (ft)	0-1	0-2	9-10	8-10	4-5	4-5	10-12	11-12	5-6	5-6
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,2-Diphenylhydrazine										
1,3-Dichlorobenzene	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1
1,4-Dichlorobenzene	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1
2,4,5-Trichlorophenol	<0.33	<0.25	<0.33	<0.25	<0.33	<0.25	<0.33	<0.25		<0.25
2,4,6-Trichlorophenol	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1		<0.1
2,4-Dichlorophenol	< 0.66	<0.1	< 0.67	<0.1	< 0.67	<0.1	< 0.65	<0.1		<0.1
2,4-Dimethylphenol	< 0.66	<0.1	< 0.67	<0.1	< 0.67	<0.1	< 0.65	<0.1		<0.1
2,4-Dinitrophenol	<1.64	<0.25	<1.67	<0.25	<1.67	<0.25	<1.63	<0.25		<0.25
2,4-Dinitrotoluene	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1		<0.1
2,6-Dinitrotoluene	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1		<0.1
2-Chloronaphthalene	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1		<0.1
2-Chlorophenol	< 0.33	<0.25	< 0.33	<0.25	< 0.33	<0.25	< 0.33	<0.25		<0.25
2-Methoxy-4-methylphenol	< 0.66		< 0.67		< 0.67		< 0.65			
2-Methylnaphthalene	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1
2-Nitroaniline	<1.64	<0.25	<1.67	<0.25	<1.67	<0.25	<1.63	<0.25		<0.25
2-Nitrophenol	< 0.66	<0.1	< 0.67	<0.1	< 0.67	<0.1	< 0.65	<0.1		<0.1
3,3-Dichlorobenzidine	< 0.33	<0.25	< 0.33	<0.25	< 0.33	<0.25	< 0.33	<0.25		<0.25
3-Nitroaniline	<1.64	<0.25	< 1.67	<0.25	<1.67	<0.25	<1.63	<0.25		<0.25
4,6-Dinitro-2-methylphenol	<1.64	<0.25	<1.67	<0.25	<1.67	<0.25	<1.63	<0.25		<0.25
4-Bromophenyl-phenylether	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1		<0.1
4-Chloro-3-methylphenol	< 0.66	<0.25	< 0.67	<0.25	< 0.67	<0.25	< 0.65	<0.25		<0.25
4-Chloroaniline	< 0.66	<0.25	< 0.67	<0.25	< 0.67	<0.25	< 0.65	<0.25		<0.25
4-Chlorophenyl-phenylether	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1		<0.1
4-Nitroaniline	<0.66	<0.25	<0.67	<0.25	<0.67	<0.25	<0.65	<0.25		<0.25
4-Nitrophenol	<0.33	<0.25	<0.33	<0.25	<0.33	<0.25	<0.33	<0.25		<0.25
Acenaphthene	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1		<0.1
Acenaphthylene	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1		<0.1
Aniline	<0.66		<0.67		<0.67		<0.65			
Anthracene	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1
Azobenzene	<0.33		<0.33		<0.33		<0.33			
Benzidine	< 0.66		< 0.67		< 0.67		< 0.65			
Benzo(a)anthracene	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1
Benzo(a)pyrene	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1
Benzo(b)fluoranthene	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1
Benzo(g,h,i)perylene	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1
Benzo(k)fluoranthene	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1
Benzoic acid	< 1.64	<0.1	< 1.67	<0.1	< 1.67	<0.1	< 1.63	<0.1		<0.1
Benzyl alcohol	< 0.66		< 0.67		< 0.67		< 0.65			
Bis(2-chloroethoxy)methane	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1
Bis(2-chloroethyl)ether	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1		<0.1
Bis(2-chloroisopropyl)ether	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1

Table 2-1
Comparison of PM Resources and MDNR Split Data for Soil
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Soil

PARAMETER	B12	MDNR B12	B12	MDNR B12	B19	MDNR B19	B19	MDNR B19	B20c	MDNR B20c
Date	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99
Depth (ft)	0-1	0-2	9-10	8-10	4-5	4-5	10-12	11-12	5-6	5-6
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Bis(2-ethylhexyl)phthalate	1.04	2.7	< 0.33	1.1	0.34	1	< 0.33	0.23	<0.330	<0.1
Butyl benzyl phthalate	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1
Carbazole	< 0.66		< 0.67		< 0.67		< 0.65			
Chrysene	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1
Dibenzo(a,h)anthracene	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1
Dibenzofuran	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1		<0.1
Diethyl phthalate	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1		<0.1
Dimethyl phthalate	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1		<0.1
Di-n-butyl phthalate	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	<0.330	<0.1
Di-n-octyl phthalate	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1
Fluoranthene	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1
Fluorene	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1	<0.330	<0.1
Hexachlorobenzene	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1		<0.1
Hexachlorobutadiene	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1
Hexachlorocyclopentadiene	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1
Hexachloroethane	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1
Indeno(1,2,3-cd)pyrene	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1
Isophorone	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1
m,p-Cresol	< 0.66		< 0.67		< 0.67		< 0.65			
Naphthalene	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	<0.330	<0.1
Nitrobenzene	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1
n-Nitrosodimethylamine	<0.66	<0.1	<0.67	<0.1	<0.67	<0.1	<0.65	<0.1		<0.1
n-Nitrosodi-n-propylamine	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1
n-Nitrosodiphenylamine	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1		<0.1
o-Cresol (2-Methylphenol)	< 0.66	<0.1	< 0.67	<0.1	< 0.67	<0.1	< 0.65	<0.1		<0.1
p-Cresol (4-Methylphenol)		<0.1		<0.1		<0.1		<0.1		<0.1
Pentachlorophenol	<1.64	<0.25	<1.67	<0.25	< 1.67	<0.25	<1.63	<0.25		<0.25
Phenanthrene	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1	<0.33	<0.1		<0.1
Phenol	< 0.16	<0.1	< 0.17	<0.1	< 0.17	<0.1	< 0.16	<0.1	<0.160	<0.1
Pyrene	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1	< 0.33	<0.1		<0.1
Pyridine	< 0.66		< 0.67		< 0.67		< 0.65			
Volatiles (total)										
1,1,1,2-Tetrachloroethane	< 0.005		< 0.005		< 0.005		< 0.005			
1,1,1-Trichloroethane	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	<0.005	<0.025
1,1,2,2-Tetrachloroethane	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025		<0.025
1,1,2-Trichloro-1,2,2-trifluoroethane	< 0.005		< 0.005		< 0.005		< 0.005			
1,1,2-Trichloroethane	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025		<0.025
1,1-Dichloro-2-propanone	< 0.030		< 0.030		< 0.030		< 0.030			
1,1-Dichloroethane	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025		<0.025
1,1-Dichloroethene	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025		<0.025
1,1-Dichloropropene	< 0.005		< 0.005		< 0.005		< 0.005			

Table 2-1
Comparison of PM Resources and MDNR Split Data for Soil
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Soil

PARAMETER	B12	MDNR B12	B12	MDNR B12	B19	MDNR B19	B19	MDNR B19	B20c	MDNR B20c
Date	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99
Depth (ft)	0-1	0-2	9-10	8-10	4-5	4-5	10-12	11-12	5-6	5-6
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,2,3-Trichlorobenzene	< 0.005		< 0.005		< 0.005		< 0.005			
1,2,3-Trichloropropane	< 0.010		< 0.010		< 0.010		< 0.010			
1,2,3-Trimethylbenzene	< 0.005		< 0.005		< 0.005		< 0.005			
1,2,4-Trichlorobenzene	< 0.005		< 0.005		< 0.005		< 0.005			
1,2,4-Trimethylbenzene	0.006		< 0.005		0.006		0.005			
1,2-Dibromo-3-chloropropane	< 0.005		< 0.005		< 0.005		< 0.005			
1,2-Dibromoethane	< 0.005		< 0.005		< 0.005		< 0.005			
1,2-Dichlorobenzene	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025		<0.025
1,2-Dichloroethane	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025		<0.025
1,2-Dichloropropane	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025		<0.025
1,3,5-Trimethylbenzene	< 0.005		< 0.005		< 0.005		< 0.005			
1,3-Dichlorobenzene	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025		<0.025
1,3-Dichloropropane	< 0.005		< 0.005		< 0.005		< 0.005			
1,4-Dichloro-2-butene	< 0.010		< 0.010		< 0.010		< 0.010			
1,4-Dichlorobenzene	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025		<0.025
1-Chlorobutane	< 0.005		< 0.005		< 0.005		< 0.005			
2,2-Dichloropropane	< 0.005		< 0.005		< 0.005		< 0.005			
2-Butanone (MEK)	< 0.010	<0.1	< 0.010	<0.1	< 0.010	<0.1	< 0.010	<0.1	<0.010	<0.1
2-Chloroethyl vinyl ether	< 0.010		< 0.010		< 0.010		< 0.010			
2-Chlorotoluene	< 0.005		< 0.005		< 0.005		< 0.005			
2-Hexanone	< 0.010	<0.1	< 0.010	<0.1	< 0.010	<0.1	< 0.010	<0.1		<0.1
2-Nitropropane	< 0.010		< 0.010		< 0.010		< 0.010			
2-Propenic acid, methyl ester	< 0.010		< 0.010		< 0.010		< 0.010			
4-Chlorotoluene	< 0.005		< 0.005		< 0.005		< 0.005			
4-Methyl-2-pentanone (MIBK)	< 0.010	<0.1	< 0.010	<0.1	< 0.010	<0.1	< 0.010	<0.1		<0.1
Acetone	< 0.010	<0.1	< 0.010	<0.1	< 0.010	<0.1	< 0.010	<0.1		<0.1
Acrolein	< 0.100		< 0.100		< 0.100		< 0.100			
Acrylonitrile	< 0.005		< 0.005		< 0.005		< 0.005			
Allyl chloride	< 0.005		< 0.005		< 0.005		< 0.005			
Benzene	< 0.002	<0.025	< 0.002	<0.025	0.003	<0.025	0.003	<0.025		<0.025
Bromobenzene	< 0.005		< 0.005		< 0.005		< 0.005			
Bromochloromethane	< 0.005		< 0.005		< 0.005		< 0.005			
Bromodichloromethane	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025		<0.025
Bromoform	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025		<0.025
Bromomethane	< 0.010	<0.025	< 0.010	<0.025	< 0.010	<0.025	< 0.010	<0.025		<0.025
Carbon disulfide	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025		<0.025
Carbon tetrachloride	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025		<0.025
Chlorobenzene	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025		<0.025
Chloroethane	< 0.010	<0.025	< 0.010	<0.025	< 0.010	<0.025	< 0.010	<0.025		<0.025
Chloroform	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	<0.005	<0.025
Chloromethane	< 0.010	<0.025	< 0.010	<0.025	< 0.010	<0.025	< 0.010	<0.025		<0.025

Table 2-1
Comparison of PM Resources and MDNR Split Data for Soil
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Soil

PARAMETER	B12	MDNR B12	B12	MDNR B12	B19	MDNR B19	B19	MDNR B19	B20c	MDNR B20c
Date	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99
Depth (ft)	0-1	0-2	9-10	8-10	4-5	4-5	10-12	11-12	5-6	5-6
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
cis-1,2-Dichloroethene	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025		<0.025
cis-1,3-Dichloropropene	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025		<0.025
Cyclohexanone	< 0.010		< 0.010		< 0.010		< 0.010		<0.010	
Dibromochloromethane	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025		<0.025
Dibromomethane	< 0.005		< 0.005		< 0.005		< 0.005			
Dichlorodifluoromethane	< 0.010		< 0.010		< 0.010		< 0.010			
Ethyl acetate	< 0.010		< 0.010		< 0.010		< 0.010			
Ethyl ether	< 0.005		< 0.005		< 0.005		< 0.005			
Ethyl methacrylate	< 0.005		< 0.005		< 0.005		< 0.005			
Ethylbenzene	< 0.002	<0.025	0.002	<0.025	< 0.002	<0.025	0.003	<0.025	0.011	0.24
Heptane	< 0.005		< 0.005		< 0.005		< 0.005			
Hexachlorobutadiene	< 0.005		< 0.005		< 0.005		< 0.005			
Hexachloroethane	< 0.005		< 0.005		< 0.005		< 0.005			
Hexane	< 0.020		< 0.020		< 0.020		< 0.020			
Iodomethane	< 0.005		< 0.005		< 0.005		< 0.005			
Isopropylbenzene	< 0.005		< 0.005		< 0.005		< 0.005			
m,p-Xylenes	0.002		0.005		0.004		0.004		0.038	
Methacrylonitrile	< 0.010		< 0.010		< 0.010		< 0.010			
Methyl methacrylate	< 0.005		< 0.005		< 0.005		< 0.005			
Methyl tert-butyl ether	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025		<0.025
Methylacrylate										
Methylene chloride	< 0.005	<0.1	< 0.005	<0.1	< 0.005	<0.1	< 0.005	<0.1	<0.005	<0.1
Naphthalene	< 0.005		< 0.005		< 0.005		< 0.005			
n-Butylbenzene	< 0.005		< 0.005		< 0.005		< 0.005			
Nitrobenzene	< 0.040		< 0.040		< 0.040		< 0.040			
n-Propylbenzene	< 0.005		< 0.005		< 0.005		< 0.005			
o-Xylene	< 0.002		0.002		< 0.002		0.003		0.007	
Pentachloroethane	< 0.005		< 0.005		< 0.005		< 0.005			
p-Isopropyltoluene	< 0.005		< 0.005		< 0.005		< 0.005			
Propionitrile	< 0.010		< 0.010		< 0.010		< 0.010			
sec-Butylbenzene	< 0.005		< 0.005		< 0.005		< 0.005			
Styrene	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025		<0.025
tert-Butylbenzene	< 0.005		< 0.005		< 0.005		< 0.005			
Tetrachloroethene	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025		<0.025
Tetrahydrofuran	< 0.005		< 0.005		< 0.005		< 0.005			
Toluene	< 0.002	<0.025	0.007	<0.025	0.005	<0.025	0.005	<0.025	0.004	<0.025
trans-1,2-Dichloroethene	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025		<0.025
trans-1,3-Dichloropropene	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025		<0.025
Trichloroethene	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025	< 0.005	<0.025		<0.025
Trichlorofluoromethane	< 0.005		< 0.005		< 0.005		< 0.005			
Vinyl acetate	< 0.010		< 0.010		< 0.010		< 0.010			

Table 2-1
Comparison of PM Resources and MDNR Split Data for Soil
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Soil

PARAMETER	B12	MDNR B12	B12	MDNR B12	B19	MDNR B19	B19	MDNR B19	B20c	MDNR B20c
Date	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99	Feb-99
Depth (ft)	0-1	0-2	9-10	8-10	4-5	4-5	10-12	11-12	5-6	5-6
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Vinyl chloride	< 0.002	<0.025	< 0.002	<0.025	< 0.002	<0.025	< 0.002	<0.025		<0.025
Xylenes, total		<0.025		<0.025		<0.025		<0.025		0.39
Miscellaneous Analysis										
Methanol										
n-Butanol										
TPH										

Highed shows chemicals detected in either one or both samples

Table 2-2
Comparison of Maximum Detected Concentrations of Chemicals in Soil with Default Target Levels
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Soil

Chemicals	Number of Samples	Number of Detects	No. of Detects/No. of Samples (%)	Maximum Detected Conc. (Max) (mg/kg)	Default Target Levels (DTLs) (mg/kg)	Exceed/Not Exceed (Max/DTL)	Ratio of Max/DTL	Remarks
Metals (total)								
Arsenic	88	76	86.4	47.1	4.35E+00	Exceed	11	
Barium	88	88	100	483	5.47E+02	Not Exceed	0.88	
Cadmium	88	32	36.4	15.6	1.88E+00	Exceed	8.3	
Chromium	88	88	100	57.2	6.65E+04	Not Exceed	0.001	
Lead	88	88	100	653	2.60E+02	Exceed	2.51	
Mercury	88	83	94.3	0.11	7.84E-03	Exceed	14	
Selenium	24	1	4.2	5.3	4.37E+00	Exceed	1.21	
Pesticides (total)								
4,4-DDD	7	2	28.6	0.409	6.83E+00	Not Exceed	0.06	
Endrin	82	6	7.3	0.513	3.66E+00	Not Exceed	0.14	
gamma-BHC (Lindane)	82	9	11.0	0.834	3.21E-02	Exceed	26	
Methoxychlor	82	1	1.2	0.242	1.25E+02	Not Exceed	0.002	
Toxaphene	132	53	40.2	489.4	1.49E+00	Exceed	328	
Semi-Volatile Compounds (total)								
2-Methylnaphthalene	58	1	1.7	7.43	8.50E+00	Not Exceed	0.87	
Benzo(a)anthracene	64	3	4.7	3.08	1.84E+00	Exceed	1.67	
Benzo(a)pyrene	64	3	4.7	3.45	1.90E-01	Exceed	18	
Benzo(b)fluoranthene	64	3	4.7	5.52	1.84E+00	Exceed	3.0	
Benzo(k)fluoranthene	64	1	1.6	1.91	1.84E+01	Not Exceed	0.10	
Bis(2-ethylhexyl)phthalate	126	24	19.0	2.7	1.17E+02	Not Exceed	0.02	
Chrysene	64	3	4.7	3.57	1.83E+02	Not Exceed	0.02	
Fluoranthene	64	4	6.3	6.26	1.19E+03	Not Exceed	0.01	
Fluorene	127	1	0.8	0.629	2.71E+02	Not Exceed	0.002	
Naphthalene	148	10	6.8	24.6	1.06E+00	Exceed	23	
Phenanthrene	64	1	1.6	1.73	2.08E+02	Not Exceed	0.01	
Phenol	127	1	0.8	2.15	1.27E+00	Exceed	1.69	
Pyrene	64	3	4.7	5.14	7.51E+02	Not Exceed	0.01	
Volatiles (total)								
1,2,3-Trimethylbenzene	60	3	5.0	0.108	NA	NA	NA	Not used on-site
1,2,4-Trimethylbenzene	81	8	9.9	5.5	3.95E+00	Exceed	1.39	
1,3,5-Trimethylbenzene	81	4	4.9	1.66	8.87E-01	Exceed	1.87	
2-Butanone (MEK)	127	2	1.6	0.0168	7.31E+00	Not Exceed	0.002	
2-Nitropropane	60	1	1.7	0.0237	NA	NA	NA	Not used on-site
Acetone	64	19	29.7	0.347	4.20E+00	Not Exceed	0.08	
Benzene	68	12	17.6	0.00775	5.61E-02	Not Exceed	0.14	
Chlorobenzene	85	8	9.4	28.7	2.01E+00	Exceed	14	
Cyclohexanone	149	6	4.0	4.18	NA	NA	NA	Used on-site
Ethylbenzene	156	33	21.2	200	3.99E+01	Exceed	5.0	
Heptane	60	1	1.7	0.0091	NA	NA	NA	Not used on-site
Isopropylbenzene	81	3	3.7	0.811	1.05E+01	Not Exceed	0.08	
n-Butylbenzene	60	1	1.7	0.0075	5.55E+01	Not Exceed	0.0001	
n-Propylbenzene	81	4	4.9	0.288	1.50E+01	Not Exceed	0.02	

Table 2-2
Comparison of Maximum Detected Concentrations of Chemicals in Soil with Default Target Levels
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Soil

Chemicals	Number of Samples	Number of Detects	No. of Detects/No. of Samples (%)	Maximum Detected Conc. (Max) (mg/kg)	Default Target Levels (DTLs) (mg/kg)	Exceed/Not Exceed (Max/DTL)	Ratio of Max/DTL	Remarks
p-Isopropyltoluene	81	2	2.5	0.566	3.41E+02	Not Exceed	0.002	
sec-Butylbenzene	81	2	2.5	0.252	4.39E+01	Not Exceed	0.01	
Tetrachloroethene	64	7	10.9	0.025	1.41E-01	Not Exceed	0.18	
Tetrahydrofuran	60	1	1.7	0.0102	3.01E-02	Not Exceed	0.34	
Toluene	152	51	33.6	8.1	2.98E+01	Not Exceed	0.27	
Trichloroethene	64	1	1.6	0.006	1.41E-01	Not Exceed	0.04	
Xylenes, total	146	54	37.0	900	1.70E+02	Exceed	5.3	
Miscellaneous Analysis								
TPH	4	4	100	17,344	NA	NA	NA	Not used in risk assessment

Notes:

Default target levels were obtained from Table B-1 in the draft Departmental Missouri Risk-Based Corrective Action Technical Guidance (MDNR, February 2005) and Table 3-1 in the Missouri Risk-Based Corrective Action Process for Petroleum Storage Tanks (MDNR, February 2005).

NA: Not available

Chemical with maximum detected concentration greater than DTL

Table 2-3
Comparison of Metal Concentrations in Soil with Background Metal Concentrations
PM Resources, Inc., Bridgeton, Missouri

Selection of Chemicals of Concern in Soil

Chemicals	Number of Samples	Number of Detects	Minimum Detected Conc. (Min) (mg/kg)	Maximum Detected Conc. (Max) (mg/kg)	Average Detected Conc. (Avg) (mg/kg)	Average Background Concentration* (mg/kg)	Range of Background Concentration* (mg/kg)
Metals (total)							
Arsenic	88	76	3	47.1	9.40E+00	8.7	2.5-72
Cadmium	88	32	0.2	15.6	9.05E-01	<1	<1-11
Lead	88	88	4.8	653	1.92E+01	20	10-7,000
Mercury	88	83	0.01	0.11	2.93E-02	0.039	<0.01-0.8
Selenium	24	1	5.3	5.3	5.30E+00	0.28	<0.1-2.7

* Geography of Soil Geochemistry of Missouri Agricultural Soils, By Ronald R. Tidball, Geological Survey Professional Paper 954-H, Table 2, 1984.

	Maximum concentration exceeds Average Background Concentration (geometric mean) and/or observed Range of Background Concentrations shown.
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Table 2-4
Organic Chemicals with Maximum Detected Concentrations in Soil Less Than DTLs
PM Resources, Inc., Bridgeton, Missouri

Chemicals	Number of Samples	Number of Detects	No. of Detects/No. of Samples (%)	Maximum Detected Conc. (Max) (mg/kg)	Default Target Levels (DTLs) (mg/kg)	Ratio of Max/DTL
Pesticides (total)						
4,4-DDD	7	2	28.6	0.409	6.83E+00	0.06
Endrin	82	6	7.3	0.513	3.66E+00	0.14
Methoxychlor	82	1	1.2	0.242	1.25E+02	0.0019
Semi-Volatile Compounds (total)						
2-Methylnaphthalene	58	1	1.7	7.43	8.50E+00	0.87
Benzo(k)fluoranthene	64	1	1.6	1.91	1.84E+01	0.10
Bis(2-ethylhexyl)phthalate	126	24	19.0	2.7	1.17E+02	0.023
Chrysene	64	3	4.7	3.57	1.83E+02	0.02
Fluoranthene	64	4	6.3	6.26	1.19E+03	0.0053
Fluorene	127	1	0.8	0.629	2.71E+02	0.0023
Phenanthrene	64	1	1.6	1.73	2.08E+02	0.0083
Pyrene	64	3	4.7	5.14	7.51E+02	0.0068
Volatiles (total)						
2-Butanone (MEK)	127	2	1.6	0.0168	7.31E+00	0.0023
Acetone	64	19	29.7	0.347	4.20E+00	0.083
Benzene	68	12	17.6	0.00775	5.61E-02	0.14
Isopropylbenzene	81	3	3.7	0.811	1.05E+01	0.077
n-Butylbenzene	60	1	1.7	0.0075	5.55E+01	0.00014
n-Propylbenzene	81	4	4.9	0.288	1.50E+01	0.019
p-Isopropyltoluene	81	2	2.5	0.566	3.41E+02	0.0017
sec-Butylbenzene	81	2	2.5	0.252	4.39E+01	0.0057
Tetrachloroethene	64	7	10.9	0.025	1.41E-01	0.18
Tetrahydrofuran	60	1	1.7	0.0102	3.01E-02	0.34
Toluene	152	51	33.6	8.1	2.98E+01	0.27
Trichloroethene	64	1	1.6	0.006	1.41E-01	0.043

Notes:

Default target levels were obtained from Table B-1 in the draft Departmental Missouri Risk-Based Corrective Action Technical Guidance (MDNR, February 2005) and Table 3-1 in the Missouri Risk-Based Corrective Action Process for Petroleum Storage Tanks (MDNR, February 2005).

Values in bold have ratio greater than 0.8.

Organic Chemical with maximum detected concentration less than DTL, but ratio of Max/DTL greater than 0.8

Table 2-5
Summary of Chemicals of Concern Detected in Soil
PM Resources, Inc., Bridgeton, Missouri

Chemicals	Number of Samples	Number of Detects	No. of Detects/No. of Samples (%)	Maximum Detected Conc. (Max) (mg/kg)	Default Target Levels (DTLs) (mg/kg)	Lowest Tier 1 Risk-Based Target Level (RBTL) for Soil, Soil Type 2 (Silty) (mg/kg)	Ratio of Max/DTL	Ratio of Max/RBTL	Borings Detected
Heavy Metals (Total)									
Arsenic	88	76	86	47.1	4.35E+00	1.91E+01	11	2.5	BC1 to BC6, B20a, B20c, B20d, B21b, B22, B23a, B28 to B42, MW4 to MW13, B1 Spill, B2 Spill, Ditch
Barium	88	88	100	483	5.47E+02	4.79E+04	0.88	0.01	BC1 to BC6, B20a, B20c, B20d, B21b, B22, B23a, B28 to B42, MW4 to MW13, B1 Spill, B2 Spill, Ditch
Cadmium	88	32	36	15.6	1.88E+00	3.47E+02	8.3	0.04	BC1 to BC5, B20a, B20c, B20d, B21b, B22, B28 to B35, MW11
Lead	88	88	100	653	2.60E+02	6.60E+02	2.5	0.99	BC1 to BC6, B20a, B20c, B20d, B21b, B22, B23a, B28 to B42, MW4 to MW13, B1 Spill, B2 Spill, Ditch
Mercury	88	83	94	0.11	7.84E-03	1.53E-01	14	0.72	BC1 to BC6, B20a, B20c, B20d, B21b, B22, B23a, B28 to B42, MW4 to MW13, B1 Spill, B2 Spill, Ditch
Selenium	24	1	4.2	5.3	4.37E+00	9.27E+02	1.2	0.006	MW4
Pesticides (total)									
gamma-BHC (Lindane)	82	9	11	0.834	3.21E-02	4.48E+00	26	0.19	LOT-1, N.E.-2, N.E.-3, SS1, SS2, B20a, B22, B23a, B2 Spill
Toxaphene	132	53	40	489	1.49E+00	4.55E+00	328	108	LOT-1, B1 to B11, BC2, BC3, BC5, BC12 to BC15, BC17, BC18, BC24, BC25 to BC30, MW1, MW3, MW5, MW6, MW8, MW10
Semi-Volatile Compounds (total)									
2-Methylnaphthalene	58	1	1.7	7.43	8.50E+00	6.56E+02	0.87	0.011	B1 Spill
Benzo(a)anthracene	64	3	4.7	3.08	1.84E+00	5.50E+00	1.7	0.56	B18, MW3
Benzo(a)pyrene	64	3	4.7	3.5	1.90E-01	5.62E-01	18	6.1	B18, MW3
Benzo(b)fluoranthene	64	3	4.7	5.5	1.84E+00	5.50E+00	3.0	1.0	B18, MW3
Naphthalene	148	10	6.8	24.6	1.06E+00	2.96E+02	23	0.083	B1, B6, B7, B19, B22, B26, B27, B1 Spill
Phenol	127	1	0.8	2.15	1.27E+00	4.32E+04	1.7	0.00005	B22
Volatiles (total)									
1,2,4-Trimethylbenzene	81	8	9.9	5.5	3.95E+00	2.15E+02	1.4	0.026	B7, B12, B19, B1 Spill, B2 Spill
1,3,5-Trimethylbenzene	81	4	4.9	1.66	8.87E-01	3.48E+01	1.9	0.048	B7, B1 Spill, B2 Spill
Chlorobenzene	85	8	9.4	28.7	2.01E+00	2.40E+02	14	0.12	B1, B3, B7, B26, B27, MW6
Ethylbenzene	156	33	21	200	3.99E+01	2.98E+03	5.0	0.067	TS1 to TS4, B7, B12, B13, B16, B19, B20a, B20c, B20d, B22, B23a, B24, B25, B31 to B34, MW1, MW3, MW6, B1 Spill, B2 Spill
Xylenes, total	146	54	37	900	1.70E+02	2.66E+03	5.3	0.34	TS1 to TS5, B7, BC1, BC12, BC13, BC17 to BC19, B20a, B20c, B20d, B21b, B22, B23a, B24 to B27, B31 to B37, B39, B40, B42, Ditch Soil

Notes:

Default target levels were obtained from Table B-1 in the draft Departmental Missouri Risk-Based Corrective Action Technical Guidance (MDNR, February 2005) and Table 3-1 in the Missouri Risk-Based Corrective Action Process for Petroleum Storage Tanks (MDNR, February 2005).

Tier 1 risk-based target levels were obtained from Tables B-9 and B-12 in the draft Departmental Missouri Risk-Based Corrective Action Technical Guidance (MDNR, February 2005) and Tables 7-2(b) and 7-2(c) in the Missouri Risk-Based Corrective Action Process for Petroleum Storage Tanks (MDNR, February 2005).

Values in bold and underlined have DTLs less than practical quantitation limits (PQLs) as per the draft Departmental MRBCA Technical Guidance.

NA: Not available

Chemical with maximum detected concentration greater than DTL

Chemical with maximum detected concentration less than DTL, but ratio of Max/DTL or Max/RBTL greater than 0.8

Table 2-6
Summary of Chemicals Not Detected in Soil
PM Resources, Inc., Bridgeton, Missouri

Chemical	Number of Samples	Maximum Detection Limit (Max) (mg/kg)	Minimum Detection Limit (Min) (mg/kg)	Lowest Tier 1 Risk-Based Target Level (RBTL) for Soil, Soil Type 2 (Silty) (mg/kg)	Exceed/Not Exceed (Max/RBTL)	Exceed/Not Exceed (Min/RBTL)	Remarks
Metals (total)							
Silver	24	1	0.88	3.31E+03	Not Exceed	Not Exceed	
Pesticides (total)							
4,4-DDE	7	0.125	0.0321	1.47E+01	Not Exceed	Not Exceed	
4,4-DDT	7	0.125	0.0451	1.47E+01	Not Exceed	Not Exceed	
Aldrin	7	0.125	0.0255	2.94E-01	Not Exceed	Not Exceed	
alpha-BHC	7	0.125	0.0194	7.84E-01	Not Exceed	Not Exceed	
alpha-Chlordane	2	0.0352	0.0351	NA	NA	NA	Not used on-site
beta-BHC	7	0.125	0.0251	2.76E+00	Not Exceed	Not Exceed	
Chlordane	7	0.125	0.0342	1.43E+01	Not Exceed	Not Exceed	
delta-BHC	7	0.125	0.0339	2.77E+00	Not Exceed	Not Exceed	
Dieldrin	7	0.125	0.0327	3.12E-01	Not Exceed	Not Exceed	
Endosulfan I	7	0.125	0.0327	NA	NA	NA	Not used on-site
Endosulfan II	7	0.125	0.0321	NA	NA	NA	Not used on-site
Endosulfan sulfate	7	0.125	0.033	NA	NA	NA	Not used on-site
Endrin aldehyde	7	0.125	0.0363	5.35E+01	Not Exceed	Not Exceed	
Endrin ketone	2	0.036	0.036	5.33E+01	Not Exceed	Not Exceed	
gamma-Chlordane	2	0.034	0.0342	2.82E+01	Not Exceed	Not Exceed	
Heptachlor	7	0.125	0.0324	9.91E-01	Not Exceed	Not Exceed	
Heptachlor epoxide	7	0.125	0.0324	5.50E-01	Not Exceed	Not Exceed	
Trifluralin	5	0.125	0.125	6.46E+02	Not Exceed	Not Exceed	
Organophosphorus Pesticides (total)							
Malathion	64	10	0.0055	3.56E+03	Not Exceed	Not Exceed	
Chlorinated Herbicides (total)							
2,4,5-TP (Silvex)	70	0.06	0.00028	1.40E+03	Not Exceed	Not Exceed	
2,4-D	70	0.2	0.00011	1.78E+03	Not Exceed	Not Exceed	
Semi-Volatile Compounds (total)							
1,2-Diphenylhydrazine	21	0.839	0.813	6.22E+00	Not Exceed	Not Exceed	
2,4,5-Trichlorophenol	64	1.65	0.25	1.77E+04	Not Exceed	Not Exceed	
2,4,6-Trichlorophenol	64	1.65	0.1	1.74E+01	Not Exceed	Not Exceed	
2,4-Dichlorophenol	52	3.3	0.1	5.19E+02	Not Exceed	Not Exceed	
2,4-Dimethylphenol	52	3.3	0.1	3.47E+03	Not Exceed	Not Exceed	
2,4-Dinitrophenol	64	8.24	0.25	3.37E+02	Not Exceed	Not Exceed	
2,4-Dinitrotoluene	64	1.65	0.1	1.58E+01	Not Exceed	Not Exceed	
2,6-Dinitrotoluene	64	1.65	0.1	7.15E+00	Not Exceed	Not Exceed	
2-Chloronaphthalene	64	33	0.1	1.33E+04	Not Exceed	Not Exceed	
2-Chlorophenol	64	1.65	0.25	7.18E+02	Not Exceed	Not Exceed	
2-Methoxy-4-methylphenol	48	3.3	0.33	NA	NA	NA	Not used on-site
2-Nitroaniline	64	8.24	0.25	3.23E+01	Not Exceed	Not Exceed	
2-Nitrophenol	52	3.3	0.10	3.29E+02	Not Exceed	Not Exceed	

Table 2-6
Summary of Chemicals Not Detected in Soil
PM Resources, Inc., Bridgeton, Missouri

Chemical	Number of Samples	Maximum Detection Limit (Max) (mg/kg)	Minimum Detection Limit (Min) (mg/kg)	Lowest Tier 1 Risk-Based Target Level (RBTL) for Soil, Soil Type 2 (Silty) (mg/kg)	Exceed/Not Exceed (Max/RBTL)	Exceed/Not Exceed (Min/RBTL)	Remarks
3,3-Dichlorobenzidine	64	1.65	0.25	1.11E+01	Not Exceed	Not Exceed	
3-Nitroaniline	64	8.24	0.25	5.20E+01	Not Exceed	Not Exceed	
4,6-Dinitro-2-methylphenol	64	8.24	0.25	7.83E+01	Not Exceed	Not Exceed	
4-Bromophenyl-phenylether	64	1.65	0.1	3.29E-01	Exceed	Not Exceed	
4-Chloro-3-methylphenol	52	3.3	0.25	NA	NA	NA	Not used on-site
4-Chloroaniline	52	3.3	0.25	6.93E+02	Not Exceed	Not Exceed	
4-Chlorophenyl-phenylether	64	1.65	0.1	3.24E-01	Exceed	Not Exceed	
4-Nitroaniline	64	3.3	0.25	2.29E+02	Not Exceed	Not Exceed	
4-Nitrophenol	64	1.65	0.25	2.19E+02	Not Exceed	Not Exceed	
Acenaphthene	64	1.65	0.1	4.00E+03	Not Exceed	Not Exceed	
Acenaphthylene	64	1.65	0.1	1.04E+04	Not Exceed	Not Exceed	
Aniline	60	495	0.5	1.69E+02	Exceed	Not Exceed	
Anthracene	64	1.65	0.1	2.00E+04	Not Exceed	Not Exceed	
Azobenzene	60	1.65	0.33	4.52E+01	Not Exceed	Not Exceed	
Benzidine	60	3.3	0.65	2.18E-02	Exceed	Exceed	
Benzo(g,h,i)perylene	64	1.65	0.1	4.30E+03	Not Exceed	Not Exceed	
Benzoic acid	52	8.24	0.1	6.57E+05	Not Exceed	Not Exceed	
Benzyl alcohol	48	3.3	0.482	5.09E+04	Not Exceed	Not Exceed	
Bis(2-chloroethoxy)methane	52	1.65	0.1	NA	NA	NA	Not used on-site
Bis(2-chloroethyl)ether	64	1.65	0.1	3.71E+00	Not Exceed	Not Exceed	
Bis(2-chloroisopropyl)ether	53	1.65	0.1	6.11E+01	Not Exceed	Not Exceed	
Butyl benzyl phthalate	64	1.65	0.1	3.57E+04	Not Exceed	Not Exceed	
Carbazole	60	3.3	0.495	2.49E+02	Not Exceed	Not Exceed	
Dibenzo(a,b)anthracene	64	1.65	0.1	5.50E-01	Exceed	Not Exceed	
Dibenzofuran	64	1.65	0.1	1.53E+03	Not Exceed	Not Exceed	
Diethyl phthalate	64	1.65	0.1	1.41E+05	Not Exceed	Not Exceed	
Dimethyl phthalate	64	1.65	0.1	1.74E+06	Not Exceed	Not Exceed	
Di-n-butyl phthalate	127	3.28	0.1	1.79E+04	Not Exceed	Not Exceed	
Di-n-octyl phthalate	64	1.65	0.1	6.99E+03	Not Exceed	Not Exceed	
Hexachlorobenzene	64	1.65	0.1	3.01E+00	Not Exceed	Not Exceed	
Hexachlorocyclopentadiene	52	1.65	0.1	5.35E+01	Not Exceed	Not Exceed	
Indeno(1,2,3-cd)pyrene	64	1.65	0.1	3.35E+00	Not Exceed	Not Exceed	
Isophorone	52	1.65	0.1	4.83E+03	Not Exceed	Not Exceed	
m,p-Cresol	48	3.3	0.495	NA	NA	NA	
n-Nitrosodimethylamine	64	3.3	0.1	8.89E-02	Exceed	Exceed	
n-Nitrosodi-n-propylamine	52	1.65	0.1	6.67E-01	Exceed	Not Exceed	
n-Nitrosodiphenylamine	64	1.65	0.1	9.97E+02	Not Exceed	Not Exceed	
o-Cresol (2-Methylphenol)	52	3.3	0.1	8.61E+03	Not Exceed	Not Exceed	
p-Cresol (4-Methylphenol)	5	0.1	0.1	8.53E+02	Not Exceed	Not Exceed	
Pentachlorophenol	64	8.24	0.25	1.86E+01	Not Exceed	Not Exceed	
Pyridine	60	3.3	0.346	NA	NA	NA	Not used on-site

Table 2-6
Summary of Chemicals Not Detected in Soil
PM Resources, Inc., Bridgeton, Missouri

Chemical	Number of Samples	Maximum Detection Limit (Max) (mg/kg)	Minimum Detection Limit (Min) (mg/kg)	Lowest Tier 1 Risk-Based Target Level (RBTL) for Soil, Soil Type 2 (Silty) (mg/kg)	Exceed/Not Exceed (Max/RBTL)	Exceed/Not Exceed (Min/RBTL)	Remarks
Volatiles (total)							
1,1,1,2-Tetrachloroethane	60	0.005	0.0047	9.99E+00	Not Exceed	Not Exceed	
1,1,1-Trichloroethane	127	0.501	0.0047	1.11E+03	Not Exceed	Not Exceed	
1,1,2,2-Tetrachloroethane	64	0.025	0.0047	9.96E+00	Not Exceed	Not Exceed	
1,1,2-Trichloro-1,2,2-trifluoroethane	60	0.005	0.0047	9.27E+03	Not Exceed	Not Exceed	
1,1,2-Trichloroethane	64	0.025	0.0047	7.74E+00	Not Exceed	Not Exceed	
1,1-Dichloro-2-propanone	60	0.0504	0.03	NA	NA	NA	Not used on-site
1,1-Dichloroethane	64	0.025	0.0047	1.10E+01	Not Exceed	Not Exceed	
1,1-Dichloroethene	64	0.025	0.0047	4.21E+01	Not Exceed	Not Exceed	
1,1-Dichloropropene	60	0.005	0.0047	NA	NA	NA	Not used on-site
1,2,3-Trichlorobenzene	60	0.005	0.0047	NA	NA	NA	Not used on-site
1,2,3-Trichloropropane	60	0.0101	0.0094	6.35E-01	Not Exceed	Not Exceed	
1,2,4-Trichlorobenzene	64	0.1	0.0047	3.09E+02	Not Exceed	Not Exceed	
1,2-Dibromo-3-chloropropane	60	0.005	0.0047	3.47E+00	Not Exceed	Not Exceed	
1,2-Dibromoethane	60	0.005	0.0047	5.86E-02	Not Exceed	Not Exceed	
1,2-Dichlorobenzene	64	0.025	0.0047	4.37E+03	Not Exceed	Not Exceed	
1,2-Dichloroethane	64	0.025	0.0047	1.84E+00	Not Exceed	Not Exceed	
1,2-Dichloropropane	58	0.025	0.0047	3.80E+00	Not Exceed	Not Exceed	
1,3-Dichlorobenzene	64	0.025	0.0047	6.92E+01	Not Exceed	Not Exceed	
1,3-Dichloropropane	48	0.005	0.0047	NA	NA	NA	Not used on-site
1,4-Dichloro-2-butene	36	0.01	0.005	NA	NA	NA	Not used on-site
1,4-Dichlorobenzene	64	0.025	0.0047	7.63E+01	Not Exceed	Not Exceed	
1-Chlorobutane	60	0.005	0.0047	NA	NA	NA	Not used on-site
2,2-Dichloropropane	60	0.01	0.0047	NA	NA	NA	Not used on-site
2-Chloroethyl vinyl ether	36	0.01	0.01	NA	NA	NA	Not used on-site
2-Chlorotoluene	60	0.005	0.0047	5.87E+02	Not Exceed	Not Exceed	
2-Hexanone	64	0.1	0.01	1.15E+02	Not Exceed	Not Exceed	
4-Chlorotoluene	60	0.005	0.0047	2.76E+00	Not Exceed	Not Exceed	
4-Methyl-2-pentanone (MIBK)	64	0.1	0.01	1.39E+04	Not Exceed	Not Exceed	
Acrolein	60	0.101	0.01	2.73E-01	Not Exceed	Not Exceed	
Acrylonitrile	60	0.0101	0.005	2.46E+00	Not Exceed	Not Exceed	
Allyl chloride	60	0.005	0.0047	2.27E+02	Not Exceed	Not Exceed	
Bromobenzene	60	0.005	0.0047	NA	NA	NA	Not used on-site
Bromochloromethane	60	0.005	0.0047	1.23E+02	Not Exceed	Not Exceed	
Bromodichloromethane	64	0.025	0.0047	5.41E+00	Not Exceed	Not Exceed	
Bromoform	64	0.025	0.0047	5.52E+02	Not Exceed	Not Exceed	
Bromomethane	64	0.025	0.0094	1.73E+00	Not Exceed	Not Exceed	
Carbon disulfide	94	0.025	0.0047	1.02E+02	Not Exceed	Not Exceed	
Carbon tetrachloride	64	0.025	0.0047	8.15E-01	Not Exceed	Not Exceed	
Chloroethane	64	0.025	0.0094	6.56E+00	Not Exceed	Not Exceed	

Table 2-6
Summary of Chemicals Not Detected in Soil
PM Resources, Inc., Bridgeton, Missouri

Chemical	Number of Samples	Maximum Detection Limit (Max) (mg/kg)	Minimum Detection Limit (Min) (mg/kg)	Lowest Tier 1 Risk-Based Target Level (RBTL) for Soil, Soil Type 2 (Silty) (mg/kg)	Exceed/Not Exceed (Max/RBTL)	Exceed/Not Exceed (Min/RBTL)	Remarks
Chloroform	127	0.5	0.0047	9.00E-01	Not Exceed	Not Exceed	
Chloromethane	64	0.025	0.0094	2.22E+00	Not Exceed	Not Exceed	
cis-1,2-Dichloroethene	64	0.025	0.0047	3.11E+01	Not Exceed	Not Exceed	
cis-1,3-Dichloropropene	64	0.025	0.0047	NA	NA	NA	Not used on-site
Dibromochloromethane	64	0.025	0.0047	2.51E+01	Not Exceed	Not Exceed	
Dibromomethane	60	0.005	0.0047	NA	NA	NA	Not used on-site
Dichlorodifluoromethane	60	0.0101	0.0094	2.24E+01	Not Exceed	Not Exceed	
Ethyl acetate	60	0.0504	0.005	NA	NA	NA	Not used on-site
Ethyl ether	60	0.005	0.0047	NA	NA	NA	Not used on-site
Ethyl methacrylate	60	0.005	0.0047	NA	NA	NA	Not used on-site
Hexachlorobutadiene	64	0.1	0.0047	4.86E+01	Not Exceed	Not Exceed	
Hexachloroethane	64	0.1	0.0047	1.65E+02	Not Exceed	Not Exceed	
Hexane	60	0.0202	0.0188	7.80E+00	Not Exceed	Not Exceed	
Iodomethane	60	0.0101	0.005	1.84E+01	Not Exceed	Not Exceed	
Methacrylonitrile	60	0.0504	0.005	NA	NA	NA	Not used on-site
Methyl methacrylate	60	0.005	0.0047	NA	NA	NA	Not used on-site
Methyl tert-butyl ether	88	0.025	0.0019	5.43E+02	Not Exceed	Not Exceed	
Methylacrylate	60	0.0101	0.0094	NA	NA	NA	Not used on-site
Methylene chloride	127	0.5	0.0047	4.03E+01	Not Exceed	Not Exceed	
Nitrobenzene	64	0.1	0.04	7.80E+01	Not Exceed	Not Exceed	
Pentachloroethane	60	0.005	0.0047	NA	NA	NA	Not used on-site
Propionitrile	60	0.0504	0.01	NA	NA	NA	Not used on-site
Styrene	64	0.025	0.0047	1.84E+04	Not Exceed	Not Exceed	
tert-Butylbenzene	60	0.005	0.0047	1.54E+03	Not Exceed	Not Exceed	
trans-1,2-Dichloroethene	64	0.025	0.0047	3.94E+01	Not Exceed	Not Exceed	
trans-1,3-Dichloropropene	64	0.025	0.0047	NA	NA	NA	Not used on-site
Trichlorofluoromethane	60	0.005	0.0047	1.11E+02	Not Exceed	Not Exceed	
Vinyl acetate	60	0.0504	0.01	NA	NA	NA	Not used on-site
Vinyl chloride	63	0.025	0.0019	3.53E-01	Not Exceed	Not Exceed	
Miscellaneous Analysis							
Methanol	6	1	1	1.83E+04	Not Exceed	Not Exceed	
n-Butanol	6	1	1	NA	NA	NA	Used on-site

Notes:

Tier 1 RBTLs were obtained from Tables B-9 and B-12 in the draft Departmental Missouri Risk-Based Corrective Action Technical Guidance (MDNR, February 2005) and Tables 7-2(b) and 7-2(c) in the Missouri Risk-Based Corrective Action Process for Petroleum Storage Tanks (MDNR, February 2005).

NA: Not available

Values in bold and underlined have RBTLs less than practical quantitation limits (PQLs) as per the draft Departmental MRBCA Technical Guidance

Chemical with maximum detection limit or minimum detection limit greater than Tier 1 RBTL

Chemical without Tier 1 RBTL, but used on-site

Table 2-7
Chemicals of Concern in Soil
PM Resources, Inc., Bridgeton, Missouri

Parameter	Number of Samples	Number of Detects	Maximum Detected Conc. (Max) (mg/kg)	Default Target Levels (DTLs) (mg/kg)	Borings Detected
Heavy Metals (total)					
Cadmium	88	32	15.6	1.88E+00	BC1 to BC5, B20a, B20c, B20d, B21b, B22, B28 to B35, MW11
Selenium	24	1	5.3	4.37E+00	MW4
Pesticides (total)					
gamma-BHC (Lindane)	82	9	0.834	3.21E-02	LOT-1, N.E.-2, N.E.-3, SS1, SS2, B20a, B22, B23a, B2 Spill
Toxaphene	132	53	489	1.49E+00	LOT-1, B1 to B11, BC2, BC3, BC5, BC12 to BC15, BC17, BC18, BC24, BC25 to BC30, MW1, MW3, MW5, MW6, MW8, MW10
Semi-Volatile Compounds (total)					
2-Methylnaphthalene	58	1	7.43	8.50E+00	B1 Spill
Benzo(a)anthracene	64	3	3.08	1.84E+00	B18, MW3
Benzo(a)pyrene	64	3	3.5	1.90E-01	B18, MW3
Benzo(b)fluoranthene	64	3	5.5	1.84E+00	B18, MW3
Naphthalene	148	10	24.6	1.06E+00	B1, B6, B7, B19, B22, B26, B27, B1 Spill
Phenol	127	1	2.15	<u>1.27E+00</u>	B22
Volatiles (total)					
1,2,4-Trimethylbenzene	81	8	5.5	<u>3.95E+00</u>	B7, B12, B19, B1 Spill, B2 Spill
1,3,5-Trimethylbenzene	81	4	1.66	<u>8.87E-01</u>	B7, B1 Spill, B2 Spill
Chlorobenzene	85	8	28.7	<u>2.01E+00</u>	B1, B3, B7, B26, B27, MW6
Ethylbenzene	156	33	200	3.99E+01	TS1 to TS4, B7, B12, B13, B16, B19, B20a, B20c, B20d, B22, B23a, B24, B25, B31 to B34, MW1, MW3, MW6, B1 Spill, B2 Spill
Xylenes, total	146	54	900	1.70E+02	TS1 to TS5, B7, BC1, BC12, BC13, BC17 to BC19, B20a, B20c, B20d, B21b, B22, B23a, B24 to B27, B31 to B37, B39, B40, B42, Ditch Soil
Miscellaneous Analysis (total)					
n-Butanol	6	0	<1	NA	NA

Table Z-8
Summary of Chemicals of Concern in Soil and in Groundwater
PM Resources, Inc., Bridgeton, Missouri

Parameter	Soil	Groundwater	Remarks	
Metals (total)				
Arsenic		X	Detected in soil	
Cadmium	X			
Selenium	X			
Volatiles (total)				
1,2,3-Trimethylbenzene		X		
1,2,4-Trimethylbenzene	X	X		
1,3,5-Trimethylbenzene	X	X		
Acetone		X	Detected in soil	
Benzene		X	Detected in soil	
Carbon disulfide		X		
Chlorobenzene	X	X		
Ethylbenzene	X	X		
Methyl tert-butyl ether (MTBE)		X	Not detected in soil	
Nitrobenzene		X	Not detected in soil	Only in MW6
Tetrahydrofuran		X		
Xylenes, total	X			
Semi-Volatile Compounds (total)				
2,4-Dimethylphenol		X	Not detected in soil	
2-Chlorophenol		X	Not detected in soil	
2-Methylnaphthalene	X	X		
Acenaphthene		X	Not detected in soil	Only in MW6
Azobenzene		X	Not detected in soil	Only in MW6
Benzo(a)anthracene	X	X		
Benzo(a)pyrene	X			
Benzo(b)fluoranthene	X			
Bis(2-ethylhexyl)phthalate		X	Detected in soil	
Carbazole		X	Not detected in soil	Only in MW6
Chrysene		X	Detected in soil	Only in MW6
Fluorene		X	Detected in soil	Only in MW6
Naphthalene	X	X		
Pentachlorophenol		X	Not detected in soil	
Phenanthrene		X	Detected in soil	Only in MW6
Phenol	X			
Pesticides (total)				
alpha-BHC		X	Not detected in soil	
Chlordane		X	Not detected in soil	Only in MW6
Diazinon		X	Not detected in soil	
gamma-BHC (Lindane)	X	X		
Stirophos		X	Never detected in GW but used on site.	
Toxaphene	X	X		
Chlorinated Herbicides				
Bentazon		X	Not detected in soil	
Miscellaneous Analysis				
n-Butanol	X			

Note:

X: Chemicals of concern

FIGURES

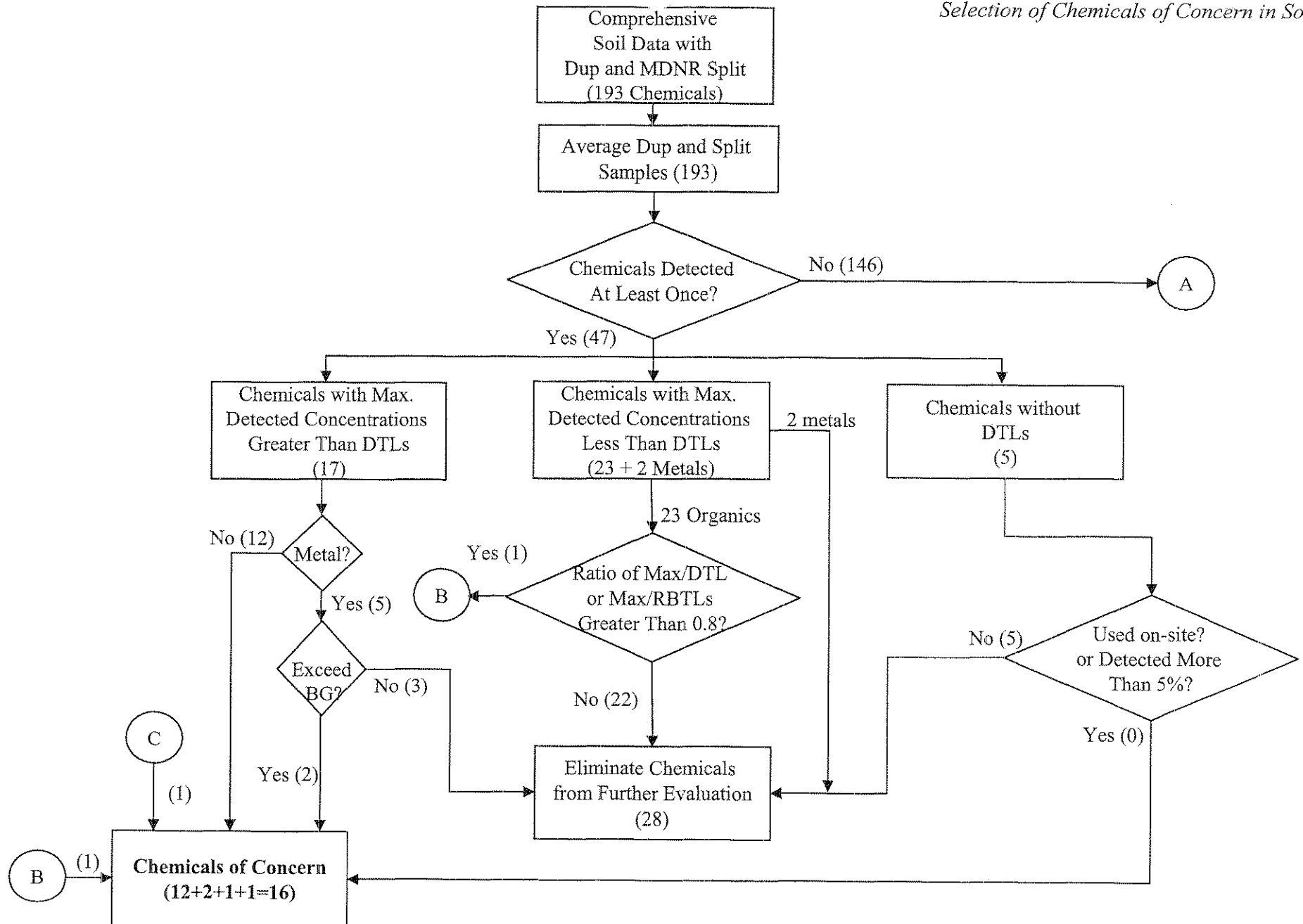
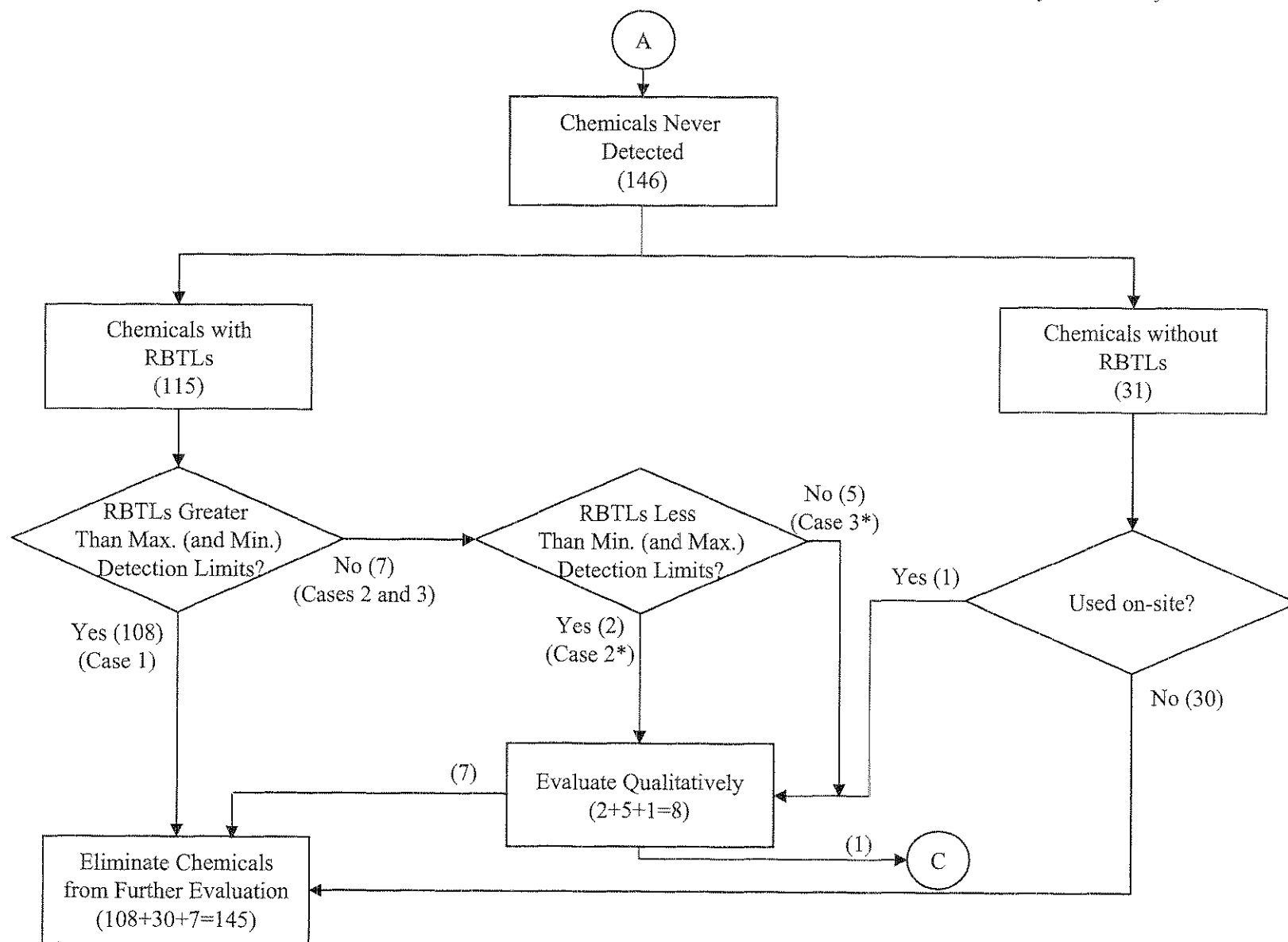


Figure 2-1. Flowchart for Selection of Chemicals of Concern in Soil (Page 1 of 2)



*: Factors to be considered in the qualitative evaluation are different.

Figure 2-1. Flowchart for Selection of Chemicals of Concern in Soil (Page 2 of 2)

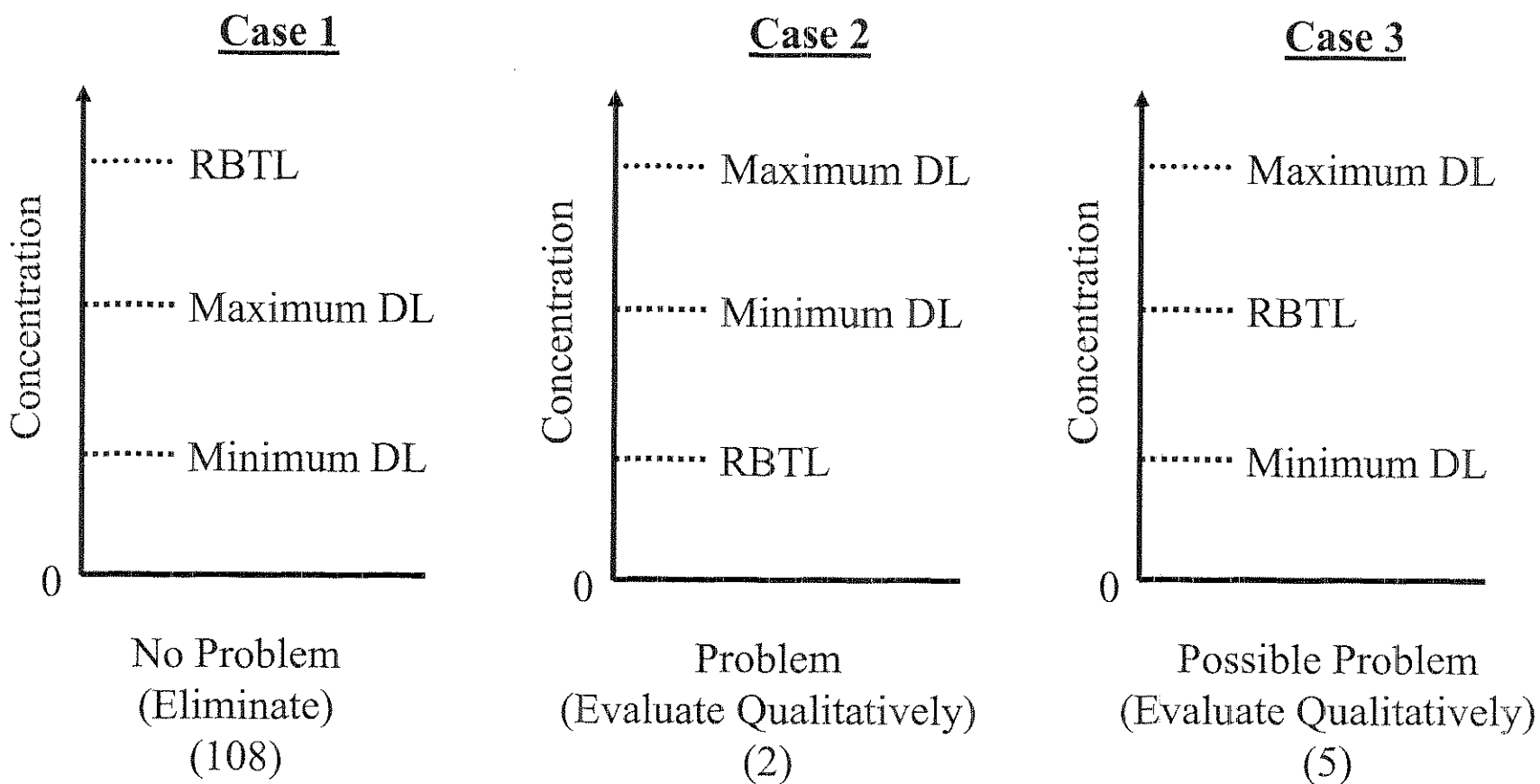


Figure 2-2. Relationship Between RBTL and Detection Limit for PM Resources Soil Data

DELINEATION OF IMPACTS

(Part 3)

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Table 3-1	Summary of Chemicals of Concern in Soil and in Groundwater
Table 3-2	Comparison of Maximum Detected Concentrations of Chemicals of Concern in Groundwater with Risk-Based Target Levels
Table 3-3	Comparison of Maximum Detected Concentrations of Chemicals of Concern in Soil with Risk-Based Target Levels

DELINEATION OF IMPACTS

1.0 DELINEATION IN MRBCA PROCESS

The Missouri Risk-Based Corrective Action (MRBCA) process requires the delineation of impacts in various contaminated media. Section 6.10, pp 6-21 of the draft *Departmental Missouri Risk-Based Corrective Action Technical Guidance* (MDNR, February 2005) discusses the delineation of impacts. Specifically the document requires:

Lateral and vertical impacts in soil and groundwater must be delineated to the extent required to determine:

- Potential routes of exposure by human and environmental receptors under current and future conditions, and
- The extent of impacts above risk-based levels for corresponding potential routes of exposure.

2.0 DELINEATION CRITERIA

As per the above delineation criteria, for PM Resources site following are key factors:

- Media of concern (soil and groundwater),
- Based on the review of available borelogs, representative soil type in the vadose zone is soil type 2 (silty),
- Current and most likely future land use is non-residential, and
- Domestic use of groundwater is not a complete pathway, as discussed in Part 5.
- RBTL's for dermal contact with groundwater for construction worker were not considered as MDNR recently agreed to change the risk algorithm based on RAGS part E.

Based on the above factors, following are the delineation criteria:

- For soil, the lowest Tier 1 risk-based target level (RBTL) of the following pathways:
 - Ingestion of, inhalation of vapor and particulates from, and dermal contact of surficial soil by non-residential worker,
 - Indoor inhalation of vapors from subsurface soil by non-residential worker, and
 - Ingestion of, inhalation of vapor and particulates from, and dermal contact of soil by construction worker.
- For groundwater the lowest Tier 1 RBTLs of the following pathways:
 - Indoor inhalation pathway from groundwater by non-residential worker for soil type 2 (silty), and
 - Outdoor inhalation of vapors.

Above delineation criteria were obtained from Tables B-9 and B-12 in the draft *Departmental Missouri Risk-Based Corrective Action Technical Guidance* (MDNR, February 2005) and Table 7-2(b) and 7-2(c) in the *Missouri Risk-Based Corrective Action Process for Petroleum Storage Tanks* (MDNR, February 2005).

3.0 CHEMICALS OF CONCERN

The chemicals of concern (COCs) in soil and groundwater have been identified in Part 1 and Part 2 of this submittal, respectively. Table 3-1 presents the summary of COCs in soil and groundwater.

4.0 GROUNDWATER DELINEATION

Table 3-2 presents the comparison of the maximum detected concentrations to the applicable Tier 1 RBTLs which are the groundwater delineation criteria. For all the COCs with RBTLs, the maximum detected concentrations were several orders of magnitude lower than the Tier 1 RBTLs. Therefore, groundwater is delineated to the extent required by MRBCA.

5.0 SOIL DELINEATION

Table 3-3 presents the comparison of the maximum detected concentrations to the lowest applicable Tier 1 RBTLs for soil which are the soil delineation criteria. The maximum detected concentrations for the following four chemicals exceeded the Tier 1 RBTLs (for COCs that have RBTLs):

- Arsenic,
- Toxaphene,
- Benzo(a)pyrene, and
- Benzo(b)fluoranthene.

The above exceedances were not necessarily at the periphery of the site. Thus concentration of these chemicals detected at the site periphery borings were further evaluated. The table below compares the concentrations in the periphery borings with the applicable Tier 1 RBTLs (delineation criteria).

Boring	Arsenic	Toxaphene	Benzo(a) pyrene	Benzo(b) fluoranthene
MW9	9.2	<0.31	<0.562	<0.556
MW6	15	0.0914	<0.56	<0.54
MW5	11	0.238	<0.56	<0.54
MW4	16	<0.0315	<0.563	<0.567
MW7	7	<0.0314	<0.347	<0.347
MW8	12	0.142	<0.562	<0.556
B42	9.2	NA	NA	NA
B40	14	NA	NA	NA
B25	NA	<0.0166	<0.33	<0.33
B26	NA	0.0594	<0.33	<0.33
B39	5.6	NA	NA	NA
B36	15	NA	NA	NA
Tier 1 RBTL (mg/kg)	19.1	4.55	0.562	5.5

NA: Not available

The detected concentrations of all the chemicals in the periphery borings are below the Tier 1 RBTLs. Therefore, soil is delineated to the extent required by MRBCA.

6.0 REFERENCES

Departmental Missouri Risk-Based Corrective Action Technical Guidance. MDNR, February 2005.

TABLES

Table 3-1
Summary of Chemicals of Concern in Soil and in Groundwater
PM Resources, Inc., Bridgeton, Missouri

Parameter	Soil	Groundwater	Remarks	
Metals (total)				
Arsenic		X	Detected in soil	
Cadmium	X			
Selenium	X			
Volatiles (total)				
1,2,3-Trimethylbenzene		X		
1,2,4-Trimethylbenzene	X	X		
1,3,5-Trimethylbenzene	X	X		
Acetone		X	Detected in soil	
Benzene		X	Detected in soil	
Carbon disulfide		X		
Chlorobenzene	X	X		
Ethylbenzene	X	X		
Methyl tert-butyl ether (MTBE)		X	Not detected in soil	
Nitrobenzene		X	Not detected in soil	Only in MW6
Tetrahydrofuran		X		
Xylenes, total	X			
Semi-Volatile Compounds (total)				
2,4-Dimethylphenol		X	Not detected in soil	
2-Chlorophenol		X	Not detected in soil	
2-Methylnaphthalene	X	X		
Acenaphthene		X	Not detected in soil	Only in MW6
Azobenzene		X	Not detected in soil	Only in MW6
Benzo(a)anthracene	X	X		
Benzo(a)pyrene	X			
Benzo(b)fluoranthene	X			
Bis(2-ethylhexyl)phthalate		X	Detected in soil	
Carbazole		X	Not detected in soil	Only in MW6
Chrysene		X	Detected in soil	Only in MW6
Fluorene		X	Detected in soil	Only in MW6
Naphthalene	X	X		
Pentachlorophenol		X	Not detected in soil	
Phenanthrene		X	Detected in soil	Only in MW6
Phenol	X			
Pesticides (total)				
alpha-BHC		X	Not detected in soil	
Chlordane		X	Not detected in soil	Only in MW6
Diazinon		X	Not detected in soil	
gamma-BHC (Lindane)	X	X		
Stirophos		X	Never detected in GW but used on site.	
Toxaphene	X	X		
Chlorinated Herbicides				
Bentazon		X	Not detected in soil	
Miscellaneous Analysis				
n-Butanol	X			

Note:

X: Chemicals of concern

Table 3-2
Comparison of Maximum Detected Concentrations of Chemicals of Concern in Groundwater with Risk-Based Target Levels
PM Resources, Inc., Bridgeton, Missouri

Delinization of Impacts

Chemicals	Number of Samples	Number of Detects	Maximum Detected Conc. (Max) (mg/L)	Tier 1 Risk-Based Target Level (RBTL) for Indoor Inhalation Pathway from Groundwater, Non-residential Land Use, Soil Type 2 (Silty) (mg/L)	Ratio of Max/RBTL	Wells Detected
Heavy Metals (Total)						
Arsenic	111	29	0.092	NA	NA	1, 2A, 4, 6, 9, 10, 11, 12, 13
Volatile Organics						
1,2,3-Trimethylbenzene	114	19	0.0604	NA	NA	1, 2A, 3, 6, 11
1,2,4-Trimethylbenzene	114	21	0.37	1.07E+01	0.03	1, 2A, 3, 4, 6, 11
1,3,5-Trimethylbenzene	114	11	0.037	7.61E+00	0.005	1, 2A, 3, 11
Acetone	114	2	4	2.92E+05	0.00001	2A, 3
Benzene	114	23	0.013	5.65E+00	0.002	1, 2A, 6, 8, 11
Carbon disulfide	117	4	0.489	1.89E+02	0.003	2A, 6, 8
Chlorobenzene	114	51	11	1.78E+02	0.06	1, 2A, 3, 5, 6, 7, 8, 9, 11, 12
Ethylbenzene	117	28	0.56	1.40E+03	0.0004	1, 2A, 3, 4, 6, 11
Methyl tert-butyl ether (MTBE)	117	5	5.65	4.59E+03	0.001	1, 2A, 11
Nitrobenzene	114	1	0.025	8.11E+02	0.00003	6
Tetrahydrofuran	69	1	3.75	1.57E+03	0.002	11
Semivolatile Organics						
2,4-Dimethylphenol	114	3	0.078	3.28E+05	0.0000002	1, 3, 11
2-Chlorophenol	114	11	0.47	6.84E+02	0.001	2A, 6
2-Methylnaphthalene	114	18	0.7	3.79E+02	0.002	1, 2A, 3, 6, 11
Acenaphthene	114	1	1.7	2.44E+04	0.0001	6
Azobenzene	114	1	0.036	2.96E+02	0.0001	6
Benzo(a)anthracene	114	1	0.082	1.10E+03	0.0001	6
Bis(2-ethylhexyl)phthalate	117	4	1.6	2.34E+06	0.000001	5, 6, 10
Carbazole	114	1	0.51	9.97E+04	0.00001	6
Chrysene	114	1	0.088	1.01E+04	0.00001	6
Fluorene	117	1	1.7	4.53E+04	0.00004	6
Naphthalene	117	20	1.2	8.11E+01	0.01	1, 2A, 3, 6, 11
Pentachlorophenol	114	6	0.4575	1.24E+05	0.000004	11
Phenanthrene	114	1	0.62	1.81E+04	0.00003	6
Pesticides (total)						
alpha-BHC	80	4	0.0007	6.26E+01	0.00001	2A, 6, 11
Chlordane	71	1	0.051	3.56E+02	0.0001	6
Diazinon	14	1	0.023	8.66E+04	0.0000003	11
gamma-BHC (Lindane)	102	13	0.1479	2.85E+02	0.001	2A, 8, 11, 13
Stirophos	13	0	NA	NA	NA	NA
Toxaphene	115	13	0.56	7.20E+02	0.001	1, 2A, 3, 5, 7, 8, 10, 11
Chlorinated Herbicides						
Bentazon	16	1	0.00218	NA	NA	10

Notes:

Tier 1 risk-based target levels were obtained from Table B-9 in the draft Departmental Missouri Risk-Based Corrective Action Technical Guidance (MDNR, February 2005) and Table 7-2(b) in the Missouri Risk-Based Corrective Action Process for Petroleum Storage Tanks (MDNR, February 2005).

NA: Not available

Table 3-3
Comparison of Maximum Detected Concentrations of Chemicals of Concern in Soil with Risk-Based Target Levels
PM Resources, Inc., Bridgeton, Missouri

Chemicals	Number of Samples	Number of Detects	No. of Detects/No. of Samples (%)	Maximum Detected Conc. (Max) (mg/kg)	Lowest Tier 1 Risk-Based Target Level (RBTTL) for Soil, Soil Type 2 (Silty) (mg/kg)	Ratio of Max/RBTTL	Borings Detected
Heavy Metals (Total)							
Cadmium	88	32	36	15.6	3.47E+02	0.04	BC1 to BC5, B20a, B20c, B20d, B21b, B22, B28 to B35, MW11
Selenium	24	1	4.2	5.3	9.27E+02	0.006	MW4
Pesticides (total)							
gamma-BHC (Lindane)	82	9	11	0.834	4.48E+00	0.19	LOT-1, N.E.-2, N.E.-3, SS1, SS2, B20a, B22, B23a, B2 Spill
Toxaphene	132	53	40	489	4.55E+00	108	LOT-1, B1 to B11, BC2, BC3, BC5, BC12 to BC15, BC17, BC18, BC24, BC25 to BC30, MW1, MW3, MW5, MW6, MW8, MW10
Semi-Volatile Compounds (total)							
2-Methylnaphthalene	58	1	1.7	7.43	6.56E+02	0.011	B1 Spill
Benzo(a)anthracene	64	3	4.7	3.08	5.50E+00	0.56	B18, MW3
Benzo(a)pyrene	64	3	4.7	3.5	5.62E-01	6.1	B18, MW3
Benzo(b)fluoranthene	64	3	4.7	5.5	5.50E+00	1.0	B18, MW3
Naphthalene	148	10	6.8	24.6	2.96E+02	0.083	B1, B6, B7, B19, B22, B26, B27, B1 Spill
Phenol	127	1	0.8	2.15	4.32E+04	0.00005	B22
Volatiles (total)							
1,2,4-Trimethylbenzene	81	8	9.9	5.5	2.15E+02	0.026	B7, B12, B19, B1 Spill, B2 Spill
1,3,5-Trimethylbenzene	81	4	4.9	1.66	3.48E+01	0.048	B7, B1 Spill, B2 Spill
Chlorobenzene	85	8	9.4	28.7	2.40E+02	0.12	B1, B3, B7, B26, B27, MW6
Ethylbenzene	156	33	21	200	2.98E+03	0.067	TS1 to TS4, B7, B12, B13, B16, B19, B20a, B20c, B20d, B22, B23a, B24, B25, B31 to B34, MW1, MW3, MW6, B1 Spill, B2 Spill
Xylenes, total	146	54	37	900	2.66E+03	0.34	TS1 to TS5, B7, BC1, BC12, BC13, BC17 to BC19, B20a, B20c, B20d, B21b, B22, B23a, B24 to B27, B31 to B37, B39, B40, B42, Ditch Soil
Miscellaneous Analysis							
n-Butanol	6	0	NA	NA	NA	NA	NA

Notes:

Tier 1 risk-based target levels were obtained from Tables B-9 and B-12 in the draft Departmental Missouri Risk-Based Corrective Action Technical Guidance (MDNR, February 2005) and Tables 7-2(b) and 7-2(c) in the Missouri Risk-Based Corrective Action Procedure.

NA: Not available

EVALUATION OF PLUME STABILITY
(Part 4)

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EVALUATION OF PLUME STABILITY

1.0 INTRODUCTION

One of the MRBCA requirements for obtaining a certificate of completion at a site is a demonstration that the groundwater plume is stable and preferably declining (refer 6.13.2 of the draft Departmental MRBCA Technical Guidance (*MDNR, 2005*)). Depending on site-specific data, statistical or graphical techniques may be used to demonstrate plume stability.

2.0 AVAILABLE DATA AT PM RESOURCES

For the chemicals of concern (COCs), Table 4-1 shows the number of times each of the thirteen wells have been sampled and the number of times each COC has been detected in that well. For example, MW1 has been sampled nine times and in 2 of these 9 sampling events arsenic was detected. For the remaining 9 events, the concentrations of Arsenic were below the detection limits. Similarly 1,2,4-trimethyl benzene has been detected in 6 of the 11 sampling events for MW2A. Table 4-1 also shows the number of wells in which each COC has been detected. For example, 1,2,3-trimethyl benzene has been detected in 5 of the 13 monitoring wells. It is important to note that 13 of the 32 COCs in groundwater have been detected in one well only (MW6).

As a first step to demonstrate plume stability, time vs. concentrations trends for each of the COCs that were detected in 4 or more sampling events in a well were plotted. If a chemical was detected less than 4 times, enough data is not available to demonstrate the trends. These plots are shown in Figures 4-1(a) through 4-1(j). A review of these figures indicates the following:

Monitoring Well MW1

- Concentration vs. time trend for chlorobenzene is plotted, and the trend appears stable.

Monitoring Well MW2A

- Concentration vs. time trends for 9 chemicals are plotted.
- Concentrations of 6 chemicals, namely 1,2,3-trimethyl benzene, 1,2,4-trimethyl benzene, ethyl benzene, 2-chlorophenol, 1,3,5- trimethyl benzene, and 2-methylnaphthalene show decreasing trends.
- Concentrations for benzene appears to be increasing.
- Concentration trends for chlorobenzene and naphthalene are not obvious.

Monitoring Well MW3

- Concentration vs. time trends for 3 chemicals are plotted.
- Ethyl benzene appears to be decreasing over the last 4 sampling events.

- Chlorobenzene and 1,2,4-trimethyl benzene trends are not obvious.

Monitoring Well MW4

- Concentration vs. time trend for arsenic is plotted and the trend is not obvious.

Monitoring Well MW6

- Concentration vs. time trends for 5 chemicals is plotted.
- Concentrations in benzene shows decreasing trend.
- Concentrations for arsenic appear to be increasing.
- Concentration trends for chlorobenzene, naphthalene, and 2-methylnaphthalene are not obvious.

Monitoring Well MW8

- Concentration vs. time trend for chlorobenzene is plotted and appears to be increasing.

Monitoring Well MW10

- Concentration vs. time trend for arsenic is plotted, and the trend is not obvious.

Monitoring Well MW11

- Concentration vs. time trends for 8 chemicals are plotted.
- Concentrations of 6 chemicals, namely 1,2,3-trimethyl benzene, 1,2,4-trimethyl benzene, benzene, chlorobenzene, gamma-BHC (Lindane), and pentachlorophenol show decreasing trends.
- Concentrations for 2-methylnaphthalene appear to be increasing.
- Concentration trend for ethyl benzene is not obvious.

A summary of the observed time vs. concentrations trends are presented in Table 4-2.

3.0 CONCLUSIONS

Although several COCs in several wells show decreasing trends, here are other COCs for which the trend is not clear. Therefore it is not clear whether the overall plume is declining or stable. Plots will be updated as new data becomes available.

4.0 REFERENCES

Departmental Missouri Risk-Based Corrective Action Technical Guidance. MDNR, February 2005.

TABLES

Table 4-1
Frequency of Chemicals of Concern Detected in Groundwater
PM Resources, Inc., Bridgeton, Missouri

Parameter	Detected in Total # of Wells	MW1 (9)	MW2A (11)	MW3 (10)	MW4 (9)	MW5 (10)	MW6 (9)	MW7 (9)	MW8 (9)	MW9 (7)	MW10 (9)	MW11 (9)	MW12 (9)	MW13 (9)
Metals (total)														
Arsenic	9	2	2		4		6			2	5	3	2	3
Volatiles (total)														
1,2,3-Trimethylbenzene	5	3	6	2			2					6		
1,2,4-Trimethylbenzene	6	2	6	4	1		3					5		
1,3,5-Trimethylbenzene	4	2	4	3								2		
Acetone	2		1	1										
Benzene	5	2	5				9		1			6		
Carbon disulfide	3		1				2		1					
Chlorobenzene	10	6	11	4		2	9	3	6	1		7	2	
Ethylbenzene	6	3	9	4	1		2					9		
Methyl tert-butyl ether (MTBE)	3	1	1									3		
Nitrobenzene	1						1							
Tetrahydrofuran	1											1		
Semi-Volatile Compounds (total)														
2,4-Dimethylphenol	3	1		1								1		
2-Chlorophenol	2		10				1							
2-Methylnaphthalene	5	1	8	1			4					4		
Acenaphthene	1						1							
Azobenzene	1						1							
Benzo(a)anthracene	1						1							
Bis(2-ethylhexyl)phthalate	3					1	2				1			
Carbazole	1						1							
Chrysene	1						1							
Fluorene	1						1							
Naphthalene	5	2	10	2			5					1		
Pentachlorophenol	1											6		
Phenanthrene	1						1							
Pesticides (total)														
alpha-BHC	3		1				1					2		
Chlordane	1						1							
Diazinon	1											1		
gamma-BHC (Lindane)	4		2						1			8		2
Stiropfos	0													
Toxaphene	8	2	2	2		3		1	1		1	1		
Chlorinated Herbicides														
Bentazon	1										1			
# COCs Detected in Wells		11	15	10	2	3	20	2	5	1	3	16	1	1

Note:

MW1 (9) - Monitoring Well (Total # of times sampled)

Time vs. concentrations trend are plotted.

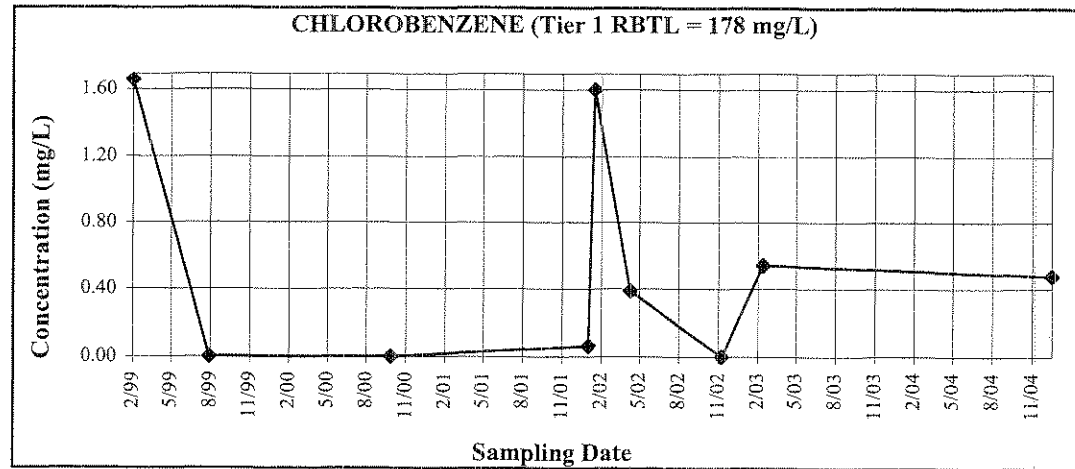
Table 4-2
Summary of Trends of Groundwater Concentrations Observed in Various Wells
PM Resources, Inc., Bridgeton, Missouri

Wells	Arsenic	1,2,3-Trimethylbenzene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Benzene	Chlorobenzene	Ethylbenzene	2-Chlorophenol	2-Methylnaphthalene	Naphthalene	Pentachlorophenol	gamma-BHC
Source Well												
MW1	NS	NS	NS	NS	NS	Stable	NS	NS	NS	NS	NS	NS
MW2A	NS	Decrease	Decrease	Decrease	Increase	Unknown	Decrease	Decrease	Decrease	Unknown	NS	NS
MW3	NS	NS	Unknown	NS	NS	Unknown	Decrease	NS	NS	NS	NS	NS
MW11	NS	Decrease	Decrease	NS	Decrease	Decrease	Unknown	NS	Increase	NS	Decrease	Decrease
Downgradient Well												
MW8	NS	NS	NS	NS	NS	Increased	NS	NS	NS	NS	NS	NS
Sidegradient Well												
MW6	Increase	NS	NS	NS	Decrease	Unknown	NS	NS	Unknown	Unknown	NS	NS
Upgradient Well												
MW4	Unknown	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW10	Unknown	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Note:

NS: Time vs. concentration trends not shown since concentrations were detected in less than 4 sampling events.

FIGURES

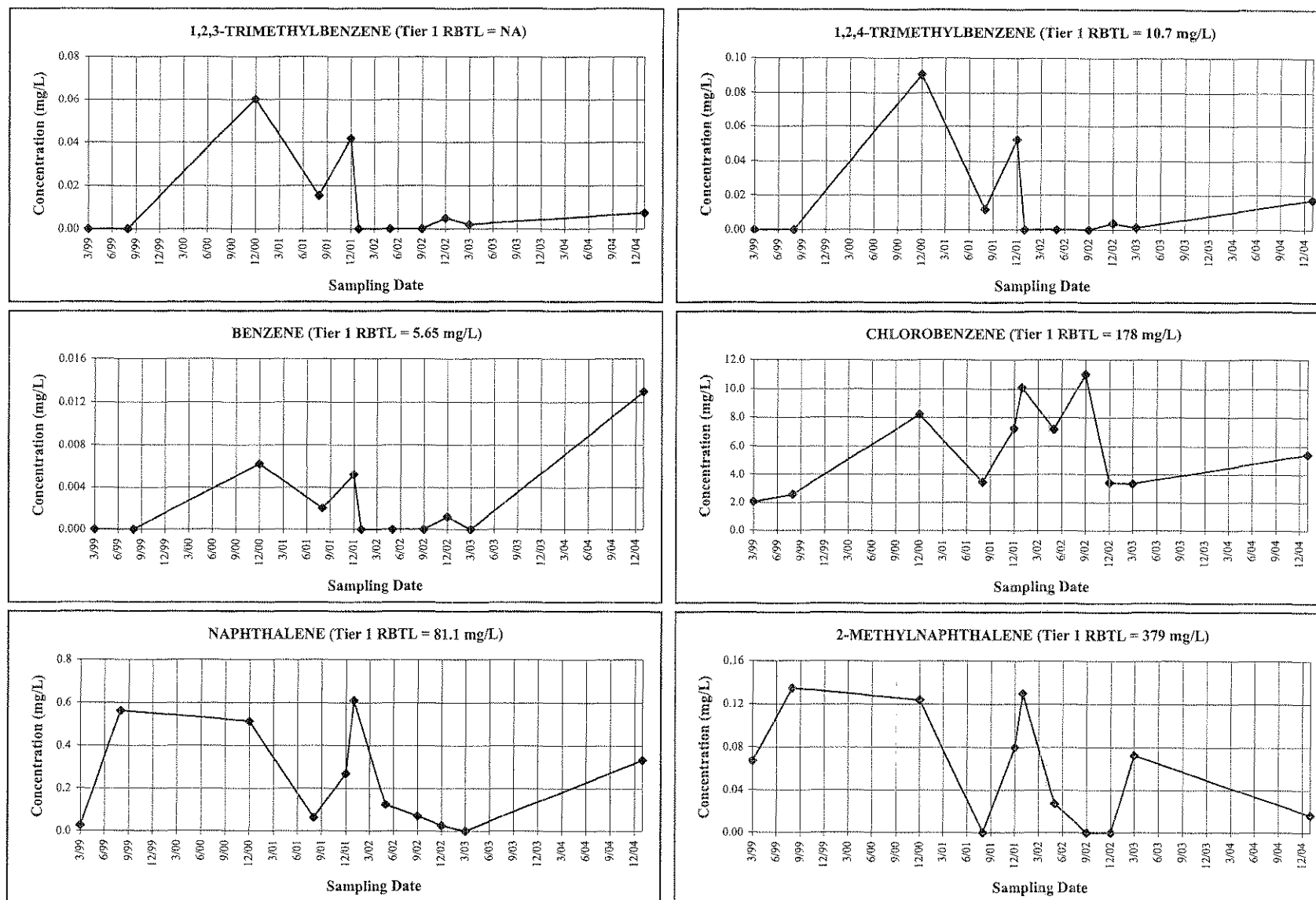


Note:

Data gap indicates "Not Sampled" (NS) period

Tier 1 RBTL: Indoor inhalation from groundwater, non-residential land use, soil type 2 (silty)

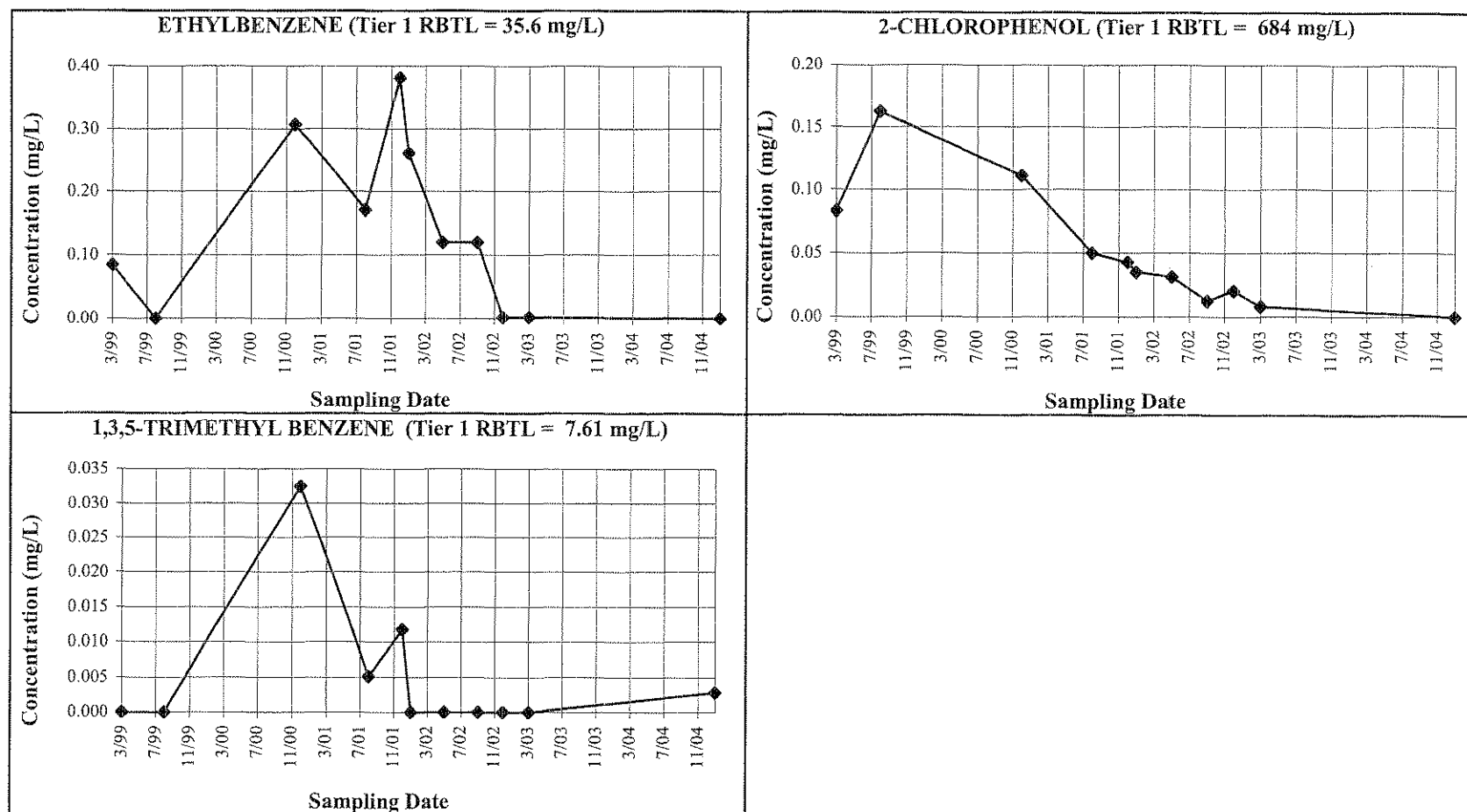
**Figure 4-1(a). Groundwater Data Collected at MW1
PM Resources, Inc., Bridgeton, Missouri**



Note: Data gap indicates "Not Sampled" (NS) period

Tier 1 RBTL: Indoor inhalation from groundwater, non-residential land use, soil type 2 (silty)

Figure 4-1(b). Groundwater Data Collected at MW2A
PM Resources, Inc., Bridgeton, Missouri

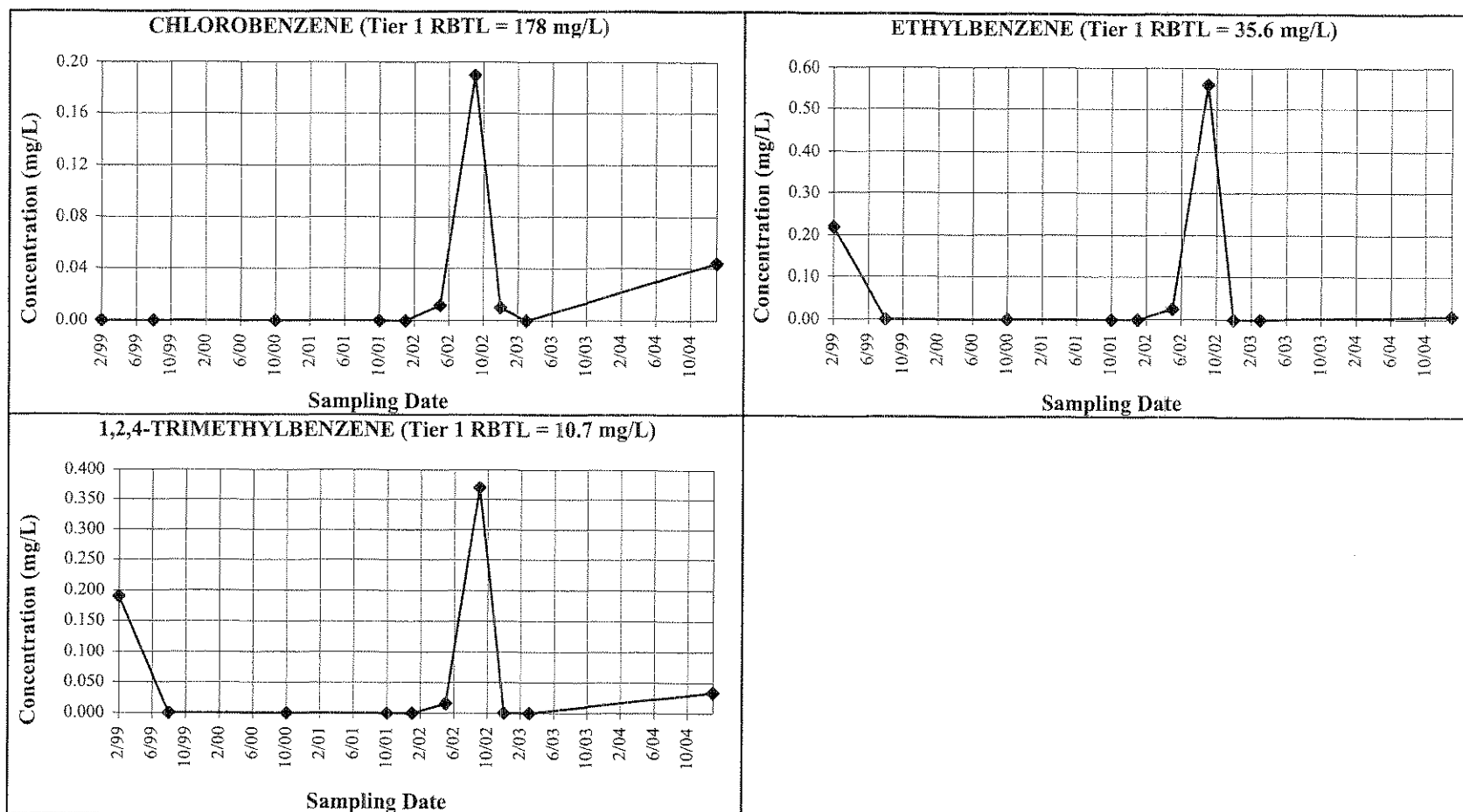


Note:

Data gap indicates "Not Sampled" (NS) period

Tier 1 RBTL: Indoor inhalation from groundwater, non-residential land use, soil type 2 (silty)

**Figure 4-1(c). Groundwater Data Collected at MW2A
PM Resources, Inc., Bridgeton, Missouri**

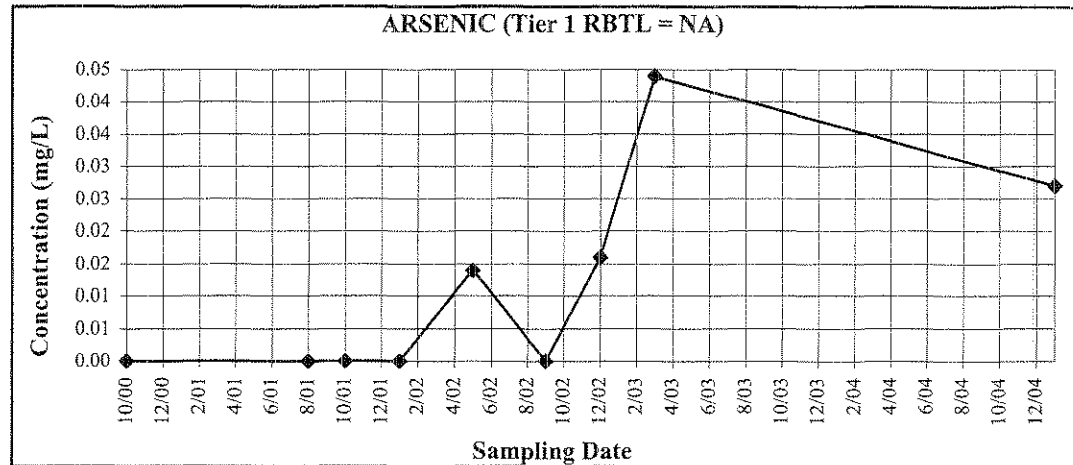


Note:

Data gap indicates "Not Sampled" (NS) period

Tier 1 RBTL: Indoor inhalation from groundwater, non-residential land use, soil type 2 (silty)

**Figure 4-1(d). Groundwater Data Collected at MW3
PM Resources, Inc., Bridgeton, Missouri**

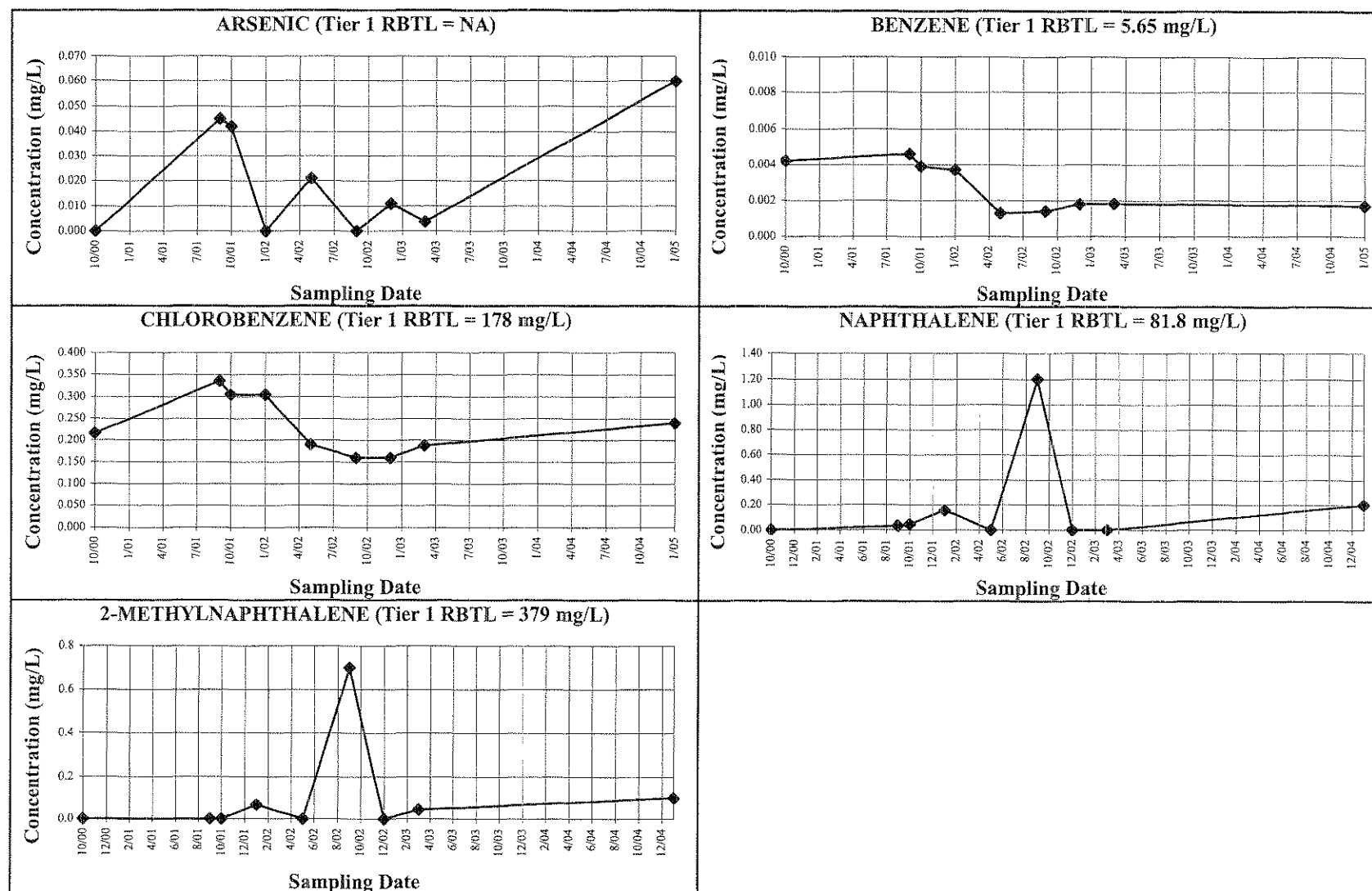


Note:

Data gap indicates "Not Sampled" (NS) period

Tier 1 RBTL: Indoor inhalation from groundwater, non-residential land use, soil type 2 (silty)

**Figure 4-1(e). Groundwater Data Collected at MW4
PM Resources, Inc., Bridgeton, Missouri**

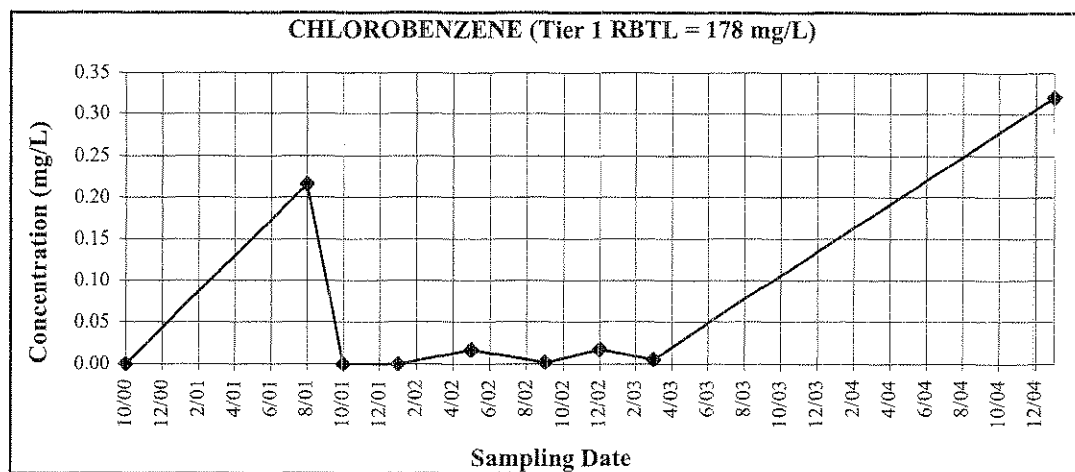


Note: Data gap indicates "Not Sampled" (NS) period

Tier 1 RBTL: Indoor inhalation from groundwater, non-residential land use, soil type 2 (silty)

Figure 4-1(f). Groundwater Data Collected at MW6

PM Resources, Inc., Bridgeton, Missouri

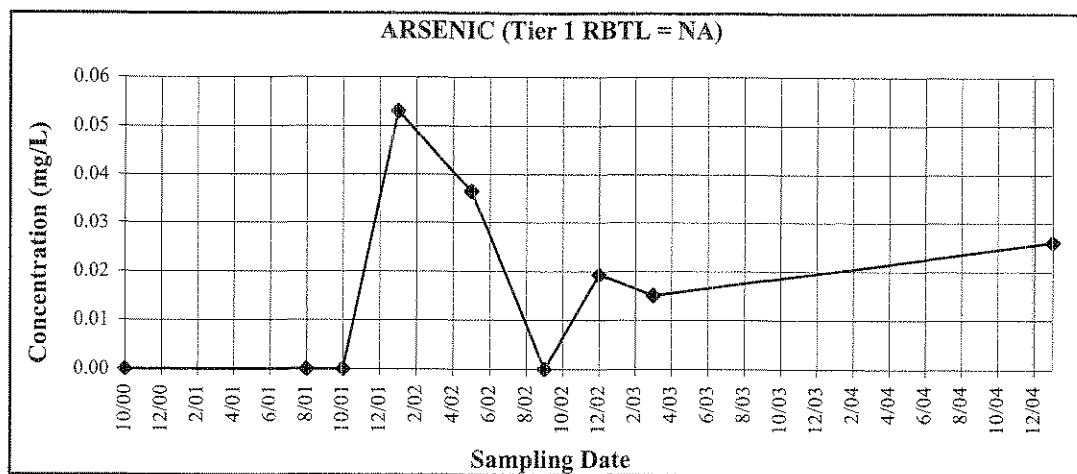


Note:

Data gap indicates "Not Sampled" (NS) period

Tier 1 RBTL: Indoor inhalation from groundwater, non-residential land use, soil type 2 (silty)

**Figure 4-1(g). Groundwater Data Collected at MW8
PM Resources, Inc., Bridgeton, Missouri**



Note:

Data gap indicates "Not Sampled" (NS) period

Tier 1 RBTL: Indoor inhalation from groundwater, non-residential land use, soil type 2 (silty)

**Figure 4-1(h). Groundwater Data Collected at MW10
PM Resources, Inc., Bridgeton, Missouri**

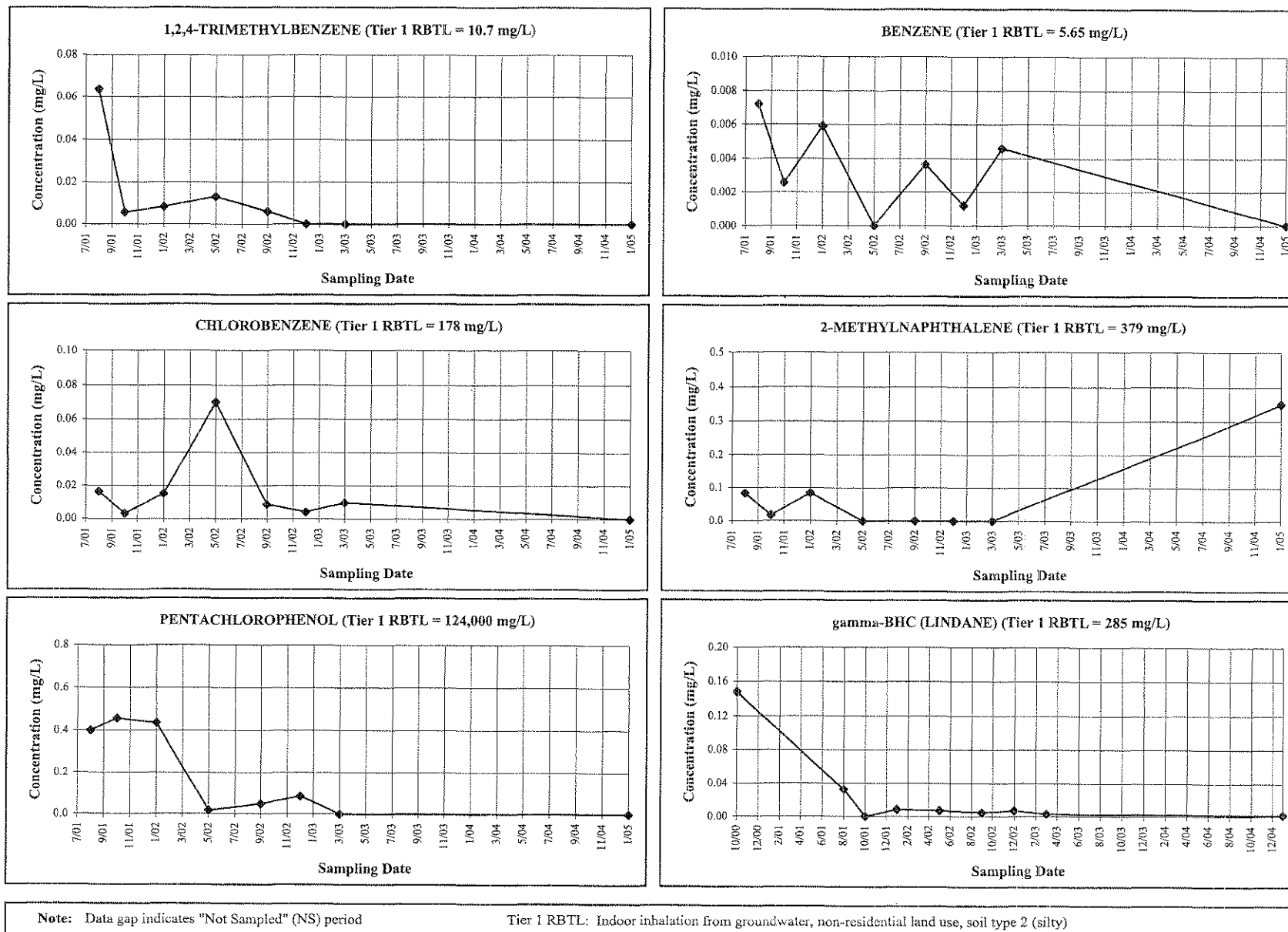
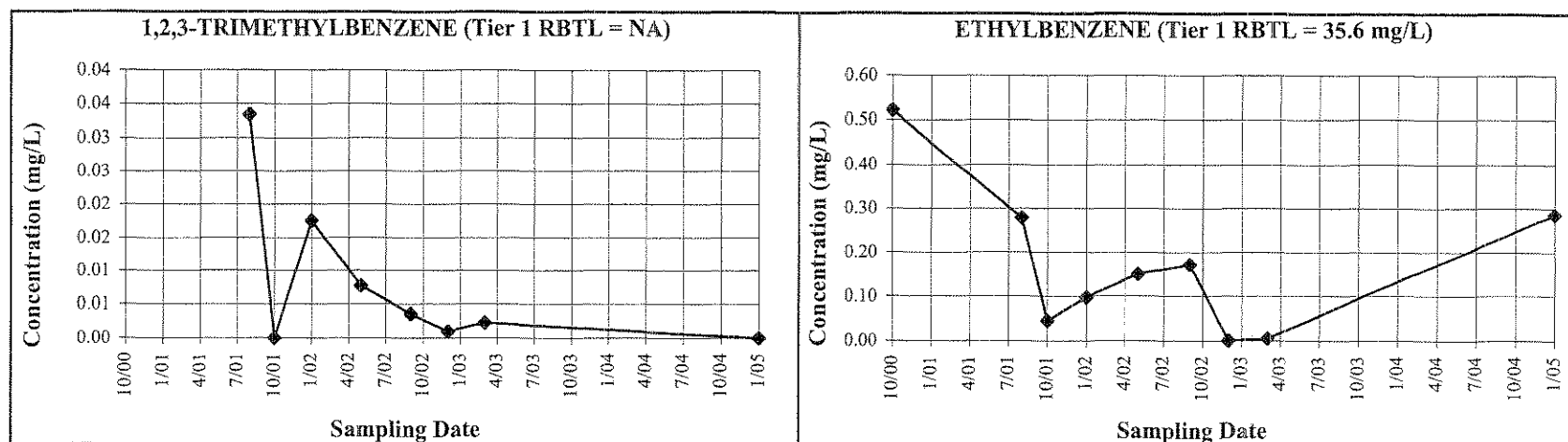


Figure 4-1(i). Groundwater Data Collected at MW11
PM Resources, Inc., Bridgeton, Missouri



Note:

Data gap indicates "Not Sampled" (NS) period

Tier 1 RBTL: Indoor inhalation from groundwater, non-residential land use, soil type 2 (silty)

**Figure 4-1(j). Groundwater Data Collected at MW11
PM Resources, Inc., Bridgeton, Missouri**

EVALUATION OF GROUNDWATER USE PATHWAY
(Part 5)

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Figure 11	Most Favorable Area for Development of High-Yield Wells in Bedrock Aquifers
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EVALUATION OF GROUNDWATER USE PATHWAY

An assessment of the groundwater domestic use exposure pathway for the PM Resources Site in Bridgeton, Missouri has been made. The assessment has been conducted pursuant to the methodology developed in the Missouri Risk-Based Corrective Action (MRBCA) process. Currently, the most complete documentation of the process to be used is the February 18, 2005 guidance document entitled *Departmental Missouri Risk Based Corrective Action (MRBCA) Technical Guidance* (DNR, 2005).

1.0 GROUNDWATER ZONES

The first component of the MRBCA groundwater use exposure pathway analysis is the identification of groundwater zones, which are defined as zones beneath and/or in the vicinity of the site that could potentially be targeted in the future for well installation. Identification of groundwater zones is based on information presented in *Water Resources of the St. Louis Area, Missouri*.¹ This 1974 publication remains the most definitive characterization of the groundwater resources in the St. Louis area. Based on that document, the zones which will be considered in this analysis are as follows (from shallowest to deepest):

1. Alluvium,
2. Bedrock Aquifer Groups 1 (Post-Maquoketa) and 2 (Kimmswick-Joachim), and
3. Bedrock Aquifer Group 3 (St. Peter-Everton) and Deeper Aquifer Groups.

These zones are depicted on attached Table 1 – Generalized Stratigraphic Column for St. Louis, St. Charles, and Jefferson Counties, Missouri from the referenced publication. Bedrock Groups 1 and 2 are grouped together due to their adjacency and similarity from a water supply perspective.

2.0 CURRENT GROUNDWATER USE

Existing Wells

The location of public water supply wells in the vicinity of the PM Resources Site was determined by querying the following data bases and resources:

- Interactive Maps of Missouri, Surface Water Inventory Areas (SWIA) data category²
- The Missouri Environmental Geology Atlas (MEGA), “public well” data layer³

¹ Miller, Don E., L.F. Emmett, John Skelton, H.G. Jeffrey, and J.H. Barks, *Water Resources of the St. Louis Area, Missouri*, Missouri Geologic Survey and Water Resources, Water Resources Report No. 30, 1974.

² This is an Internet-based resource maintained by the Center for Agricultural, Resource and Environmental Systems (CARES). One of the data categories on this resource is the source water inventory area (SWIA) for all public drinking water systems using ground water (wells) sources.

³ MEGA is a product of the Missouri DNR Geologic Survey and Resources Assessment Division (GSRAD). The most current version of MEGA (Version 2003.1) was used.

Results from the SWIA search are shown on the attached map of Bridgeton Area – Public Water Supply Wells. The nearest public water supply wells are installed in the alluvial wells deposits across the Missouri River, northwest of the site, and more than 4 miles from the site. Results of the MEGA search identified an additional public water supply well (but inactive) located approximately 5 miles southwest of the site (the Timbercrest Subdivision well). This well was installed in Aquifer Group 1.

The general lack of bedrock water supply wells in the City of St. Louis is consistent with the groundwater use assessment presented in *Water Resources of the St. Louis Area, Missouri*. Figure 11 from that publication (attached) shows that bedrock aquifers beneath the City of St. Louis are not favorable for development of high yield wells, due to water quality considerations (e.g. TDS).

The location of private water supply wells in the vicinity of the PM Resources Site was determined by querying the following data bases and resources:

- MEGA, “certified well” data layer, which presents data from the Wellhead Information Management System (WIMS) data base, which resulted from the Water Well Drillers Law of 1986
- MEGA, “well logs” data layer

There were no water production wells in the City of St. Louis in the MEGA certified well data layer within 3 miles of the site. This suggests that no production wells have been installed in the vicinity of the site in the recent era. Information on the certified wells closest to the site is summarized in the attached table of Certified Wells Closest to the PM Resources Site. Based on the total depth of the wells, these wells are apparently installed in alluvium.

Review of the MEGA “well logs” data layer revealed 9 older production wells within approximately 1 mile of the site. Data for these wells are summarized in the attached table of MEGA Logged Wells, Production Wells, PM Resources Area. The reported date of well installation ranges from 1924 to 1957. All of these older wells are installed in relatively shallow bedrock, with the deepest extending only into the upper portion of Aquifer Group 2. The attached map shows the approximate location of these wells in reference to the PM Resources facility.

Probability of Impact to Existing Wells

Based on the location and distance to existing alluvial wells (most of which are on the other side of the Missouri River), there is not a reasonable probability of impact by Site chemicals of concern (COCs) to these wells.

Finding

Based on the distance to the “certified wells” from the PM Resources property, it is unlikely that these wells would be impacted by the COCs identified at the PM Resources site.

Based on the distance from the PM Resources facility and the well depths, it is our opinion that it is unlikely that the older production wells identified within 1 mile of the PM Resources property (if they still exist and are in use) would be impacted by the COCs identified at the PM Resources site.

3.0 FUTURE GROUNDWATER USE

In this section, the groundwater use pathway under future conditions is assessed for individual groundwater zones, consistent with MRBCA guidance.

Alluvium

Suitability for Use. It is assumed that a well installed in this zone would meet both the yield and TDS criteria stated in the MRBCA guidance. Thus, the zone would be deemed “suitable for use”.

Probability of Future Use. Considerations related to the probability of future use of groundwater in this zone are summarized below.

- There is no pattern of recent well installation in this zone in the vicinity of the site.
- There are alternative sources of water supply. The area is served by Missouri-American Water Company. Based on the conversation with this company, they obtain water from surface sources, primarily Missouri River.
- PM Resources agrees to an Alternative Use Limitation (AUL) to prevent future installation of water supply wells on their property.

Based on these considerations, the weight of evidence is that it is unlikely that future groundwater will be obtained from the Alluvium for domestic use in close proximity to the PM Resources site.

Probability of Impact by Site COC’s. Based on these considerations, the weight of evidence is that it is unlikely that future Alluvium groundwater supply wells will be impacted by the COCs identified at the PM Resources site.

Bedrock Aquifer Groups 1 and 2

The uppermost bedrock formation at the site is the Ste. Genevieve Formation or St. Louis Limestone.⁴ These formations are part of the Post-Maquoketa bedrock aquifer group.

⁴ Based on logging for the logged wells nearest the site, as reported in the MEGA “well logs” data layer.

Suitability for Use. It is assumed that wells installed in this zone would yield between 5 and 50 gallons per minute (gpm), and thus would easily pass the 0.25 gpm criterion set forth in the MRBCA guidance.⁵ Based on the available data, the TDS in this aquifer group may be below 10,000 mg/L.⁶ Thus, according to the MRBCA guidance, this zone would be deemed “suitable for use”.

Probability of Future Use. Considerations related to the probability of future use of groundwater in this zone are summarized below.

- There is no pattern of recent well installation in this zone in the vicinity of the site.
- Groundwater from this zone is generally considered saline from a water supply perspective.⁷
- There are alternative sources of water supply. The area is served by Missouri-American Water Company. Based on the conversation with this company, they obtain water from surface sources, primarily Missouri River. There are also high-yielding wells in underlying bedrock formations (Bedrock Aquifer Groups 3 and 4).
- PM Resources agrees to an Alternative Use Limitation (AUL) to prevent future installation of water supply wells on their property.

Based on these considerations, the weight of evidence is that there is not a reasonable probability of future use of this zone as a water supply.

Finding for Aquifer Groups 1 and 2. The groundwater use pathway is not complete under future conditions because there is not a reasonable probability of future use.

Deeper Aquifer Groups

The deeper bedrock includes the St. Peter Sandstone, the Roubidoux Formation, Gasconade Dolomite, and Potosi Dolomite. In the City of St. Louis area, the St. Peters Sandstone occurs at a depth of approximately 1,500 feet below ground surface (bgs), and is the shallowest unit that could reliably be expected to yield more than 50 gpm. The even more productive zones of the deeper aquifer groups start at a depth of about 2,100 feet bgs.⁸

Suitability for Use. These bedrock aquifer groups contain formations with yields sufficient for purposes of large-scale water supply. However, there is considerable uncertainty as to whether or not wells installed in these deeper aquifers would meet the

⁵ See attached Table 1 from Water Resources of the St. Louis Area, Missouri.

⁶ The maximum reported TDS for this aquifer group is 6,880 mg/L (Page 26, *Water Resources of the St. Louis Area, Missouri*.)

⁷ See attached Figure 11 from *Water Resources of the St. Louis Area, Missouri*.

⁸ Personal communication between Keith Piontek and Jim Vandike/DNR GSRAD, 4/7/03 telephone conversation.

MRBCA criterion of 10,000 mg/L TDS. For the purposes of this assessment, temporarily putting aside the uncertainty on TDS, this zone is deemed “suitable for use”.

Probability of Future Use. Considerations related to the probability of future use of groundwater in this zone are summarized below.

- There is no pattern of current use of this zone.
- Groundwater from this zone is generally considered saline from a water supply perspective. The high TDS content of groundwater from these deeper zones would limit the probability of use.⁹
- There are alternative sources of water supply. The area is served by Missouri-American Water Company. Based on the conversation with this company, they obtain water from surface sources, primarily Missouri River.
- PM Resources agrees to an Alternative Use Limitation (AUL) to prevent future installation of water supply wells on their property.

Based on the above considerations, there is a low probability that these deeper aquifers would be used as a source of water supply. However, since they are the most prolific water producing zones beneath the City of St. Louis, these zones may make them the most viable source of large-scale water supply available from local bedrock zones.

Probability of Impact by Site COC's. Given the depth to the water producing formations in these deeper aquifer groups and the presence of confining layers lying between COC sources at the site and the deeper formations (i.e. the Maquoketa Shale and the Decorah Formation), there is not a reasonable probability of impact by Site COC's.

Finding for Deeper Aquifer Groups. There is a low probability that these deeper aquifers would be used as a source of water supply. However, even assuming there would be a reasonable probability of future use of these aquifers, there is not a reasonable probability of impact by Site COC's. Therefore, the groundwater use pathway is not complete under future conditions.

4.0 SUMMARY OF FINDINGS

The groundwater use pathway was evaluated pursuant to the MRBCA process. Given the distance to existing groundwater production wells, there is no reasonable probability of impact to existing wells by site COC's. Thus, the groundwater use pathway is not complete under current conditions. For the unconsolidated deposits and the shallow bedrock, the weight of evidence is that there is not a reasonable probability of future use of these zones as a source of water supply. Deeper bedrock formations contain more prolific water producing zones than the shallow bedrock. Considering factors such as

⁹ There is little water quality data for wells at this depth beneath the City of St. Louis. TDS values in individual wells in the general vicinity are reported as high as 7,270 for Aquifer Group 3, 9,970 mg/L for Aquifer Group 4, and 13,500 mg/L for Aquifer Group 5 (see pages 31 through 35 of *Water Resources of the St. Louis Area, Missouri*.) Beneath the City of St. Louis, TDS could exceed 10,000 mg/L for wells in these deeper aquifers (7/3/03 phone conversation with Jim Vandike/DNR GSRAD).

current groundwater use patterns, the existence of a municipal water supply, and the salinity of deeper groundwater, there is a low probability that even the deeper bedrock formations would be used as a source of future water supply. However, assuming there would be a reasonable probability of future use of these deeper zones, there is not a reasonable probability of impact by Site COC's. Therefore, the domestic use groundwater use pathway is not complete under future conditions for any of the groundwater zones at the site.

5.0 REFERENCES

Departmental Missouri Risk-Based Corrective Action Technical Guidance. MDNR, February 2005.

Miller, Don E., L.F. Emmett, John Skelton, H.G. Jeffrey, and J.H. Barks, *Water Resources of the St. Louis Area, Missouri*, Missouri Geologic Survey and Water Resources, Water Resources Report No. 30, 1974.

Website for the Center for Agricultural, Resource and Environmental Systems (CARES), Source Water Inventory Area (SWIA).

Missouri Environmental Geology Atlas (MEGA), Missouri Department of Natural Resources, Geological Survey and Resources Assessment Division (GSRAD), December 2003 (Version 2003.1).

Personal communications between Keith Piontek and Jim Vandike/DNR GSRAD, 4/7/03 & 7/3/03 telephone conversations.

TABLES

WATER RESOURCES OF THE ST. LOUIS AREA, MISSOURI

Table 1

Generalized stratigraphic column for St. Louis,
St. Charles, and Jefferson Counties, Missouri

Aquifers most favorable as water sources are shaded							
System	Series	Group	Formation	Aquifer group	Thick-ness (feet)	Dominant lithology	Water-bearing character
Quaternary	Holocene		Alluvium ^{1/}		0-150	Sand, gravel, silt, and clay.	Some wells yield more than 2,000 gpm.
	Pleistocene		Loess		0-110	Silt	
				Glacial till		0-55	Pebbly clay and silt.
Pennsylvanian	Missourian	Pleasanton	Undifferentiated		0-75	Shales, siltstones, "dirty" sandstones, coal beds and thin limestone beds.	Generally yields very small quantities of water to wells. Yields range from 0-10 gpm.
	Desmoinesian	Marmaton	Undifferentiated		0-90		
	Atokan	Cherokee	Undifferentiated		0-200		
			Undifferentiated				
Mississippian	Meramecian		Ste. Genevieve Formation	1	0-160	Argillaceous to arenaceous limestone.	Yields small to moderate quantities of water to wells. Yields range from 5 to 50 gpm. Higher yields are reported for this interval locally.
			St. Louis Limestone		0-180		
			Salem Formation		0-180		
			Warsaw Formation		0-110		
	Osagean		Burlington-Keokuk Limestone		0-240	Cherty limestone	
			Fern Glen Formation		0-105	Red limestone and shale.	
	Kinderhookian	Chouteau	Undifferentiated		0-122	Limestone, dolomitic limestone, shale, and siltstone.	
Devonian	Upper	Sulphur Springs	Bushberg Sandstone	0-60	Limestone and sandstone.		
			Glen Park Limestone				
			Grassy Creek Shale	0-50	Fissile, carbonaceous shale.		
Silurian			Undifferentiated		0-200	Cherty limestone.	
Ordovician			Maquoketa Shale		0-163	Silty, calcareous or dolomitic shale.	Probably constitutes a confining influence on water movement.
	Cincinnati		Cape Limestone		0-5	Argillaceous limestone.	
			Kimmswick Formation		0-145	Massive limestone	
	Champlainian		Decorah Formation		0-50	Shale with interbedded limestone.	Yields small to moderate quantities of water to wells. Yields range from 3 to 50 gpm.
			Plattin Formation	2	0-240	Finely crystalline limestone.	
			Rock Levee Formation		0-93	Dolomite and limestone, some shale.	Decorah Formation probably acts as a confining bed locally.
			Joachim Dolomite		0-135	Primarily argillaceous dolomite.	
			St. Peter Sandstone		0-160		
			Everton Formation	3	0-130	Silty sandstone, cherty limestone grading upward into quartzose sandstone.	Yields moderate quantities of water to wells. Yields range from 10-140 gpm.
	Canadian		Powell Dolomite		0-150	Sandy and cherty dolomites and sandstone.	Yields small to large quantities of water to wells. Yields range from 10 to 300 gpm. Upper part of aquifer group yields only small amounts of water to wells.
			Cotter Dolomite		0-320		
			Jefferson City Dolomite	4	0-225		
			Roubidoux Formation		0-177		
			Gasconade Dolomite		0-280		
		Gunter Sandstone Member					
Cambrian	Upper	Elvins	Eminence Dolomite	5	0-172	Cherty dolomites, siltstones, sandstone, and shale.	Yields moderate to large quantities of water to wells. Yields range from 10 to 400 gpm.
			Potosi Dolomite		0-325		
			Derby-Doerun Dolomite		0-165		
			Davis Formation		0-150		
			Bonneterre Formation		245-385		
			Lamotte Sandstone		235+		
Precambrian						Igneous and metamorphic rocks.	Does not yield water to wells in this area.

^{1/} Basal part may be of Pleistocene age.

NOTE: Stratigraphic nomenclature may not necessarily be that of the U.S. Geological Survey.

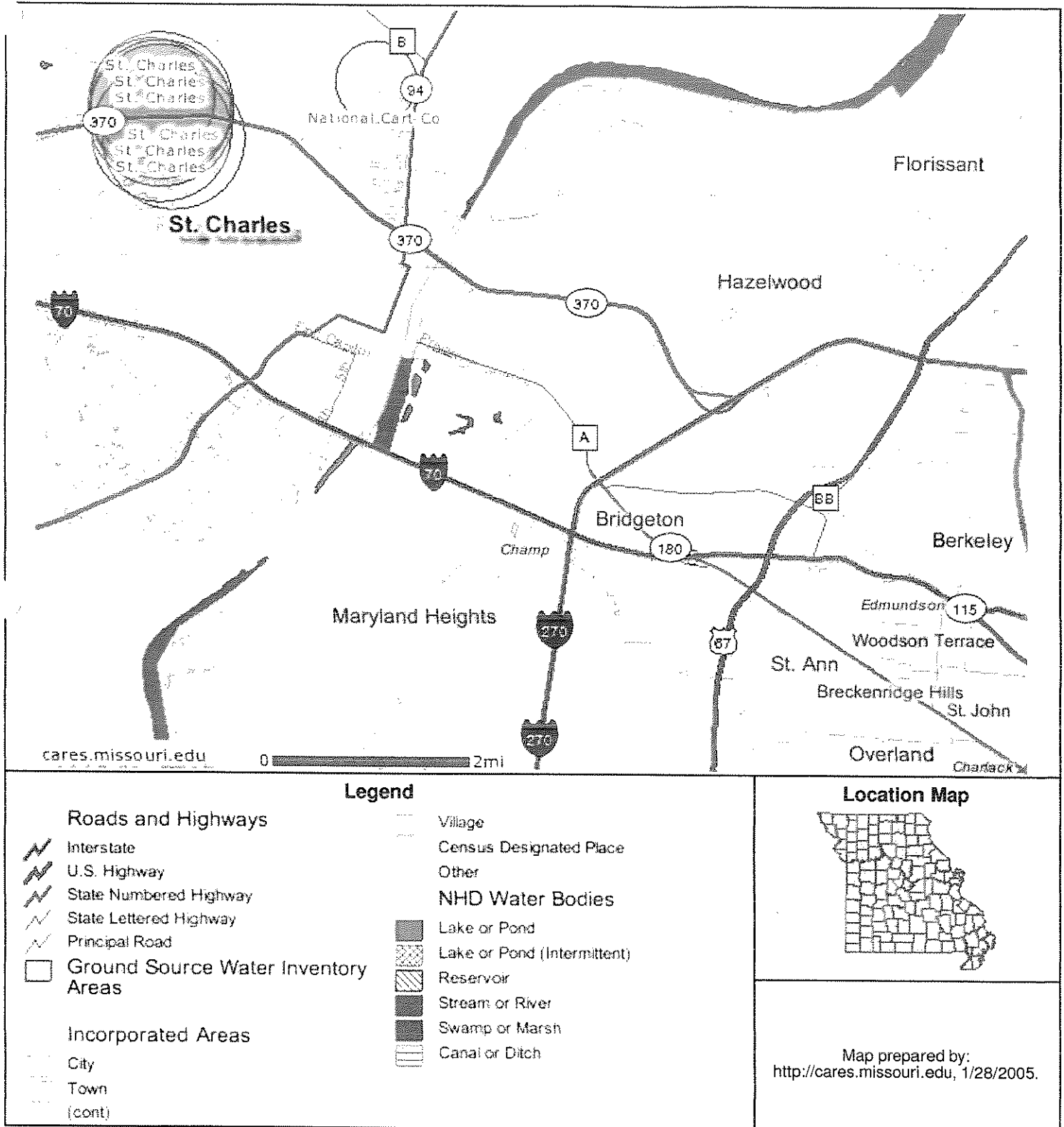
Select Certified Wells in MEGA Data Base

REFNUM	Relationship to PM Resources Site	Owner Last Name	Use	Well Completion Date	Total Depth (feet)	Casing Length (feet)
0031179A	Approximately 3 miles N-NE of site			10/4/1990 0:00	80	80
0100272A	Approximately 3.5 miles SW of site		I	2/11/2000 0:00	80	40
0181904A	Approximately 5 miles NE of site	COCKS	D	8/23/1997 0:00	70	71
0182960A	Approximately 3.5 miles south of site	NOOMAN	D	10/11/1997 0:00	60	25

Log ID	Well Type	Owner	Drill Date	Total Depth of Well?	Total Depth of Well?	Uppermost Formation	Formation at Well Bottom	Plugged?	Casing Length (feet)
20676	Private Well	REVELLE			225	STE. GENEVIEVE LIMESTONE	ST LOUIS LIMESTONE	N	67
6794	Private Well	LUECK	194012	85'	197	STE. GENEVIEVE LIMESTONE	ST LOUIS LIMESTONE	N	30
15897	Private Well	HAMMEL	195702	145'	400	STE. GENEVIEVE LIMESTONE	KEOKUK-BURLINGTON L.S. UNDIFF	N	28
10022	Industrial High Capacity Well	WEST LAKE QUARRY & MAT CO	194804		325	ST LOUIS LIMESTONE	WARSAW FORMATION		0
6642	Private Well	McGEE	194012		202	ST LOUIS LIMESTONE	SALEM FORMATION	N	62
11506	Private Well	HOLTSNEIDER	195101		210	STE. GENEVIEVE LIMESTONE	ST LOUIS LIMESTONE	N	76
21799	Private Well	MALONEY			350	ST LOUIS LIMESTONE	SALEM FORMATION	N	118
2118	Noncommunity Public Well	WEST LAKE PARK & AMUSE.#2	192607		430	MISSISSIPPIAN SYSTEM	KIMMSWICK LIMESTONE		0
3039	Private Well	WEST LAKE PARK #1	192403	560'	915	ST LOUIS LIMESTONE	KIMMSWICK LIMESTONE		0

FIGURES

Bridgeton Area – Public Water Supply Wells



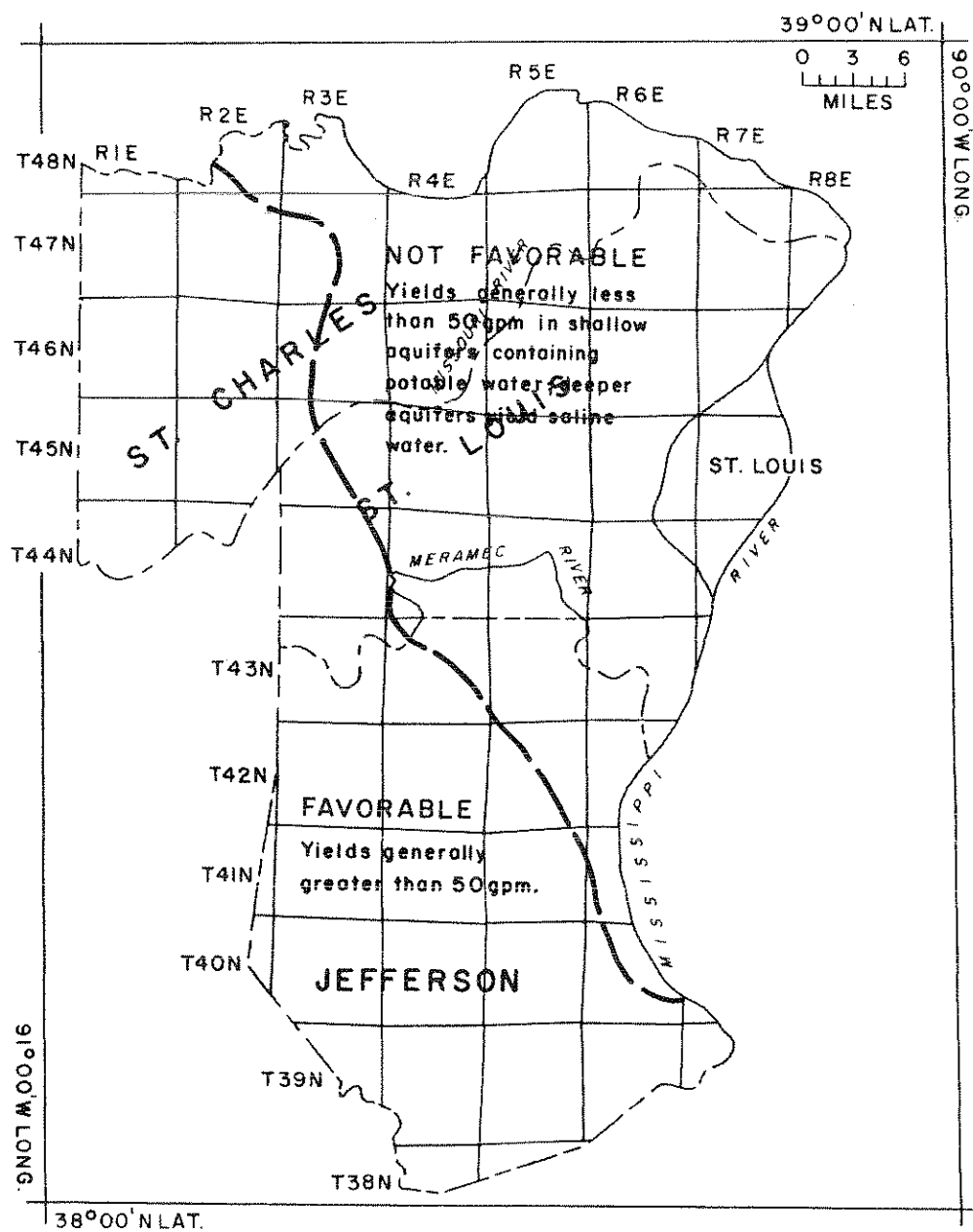
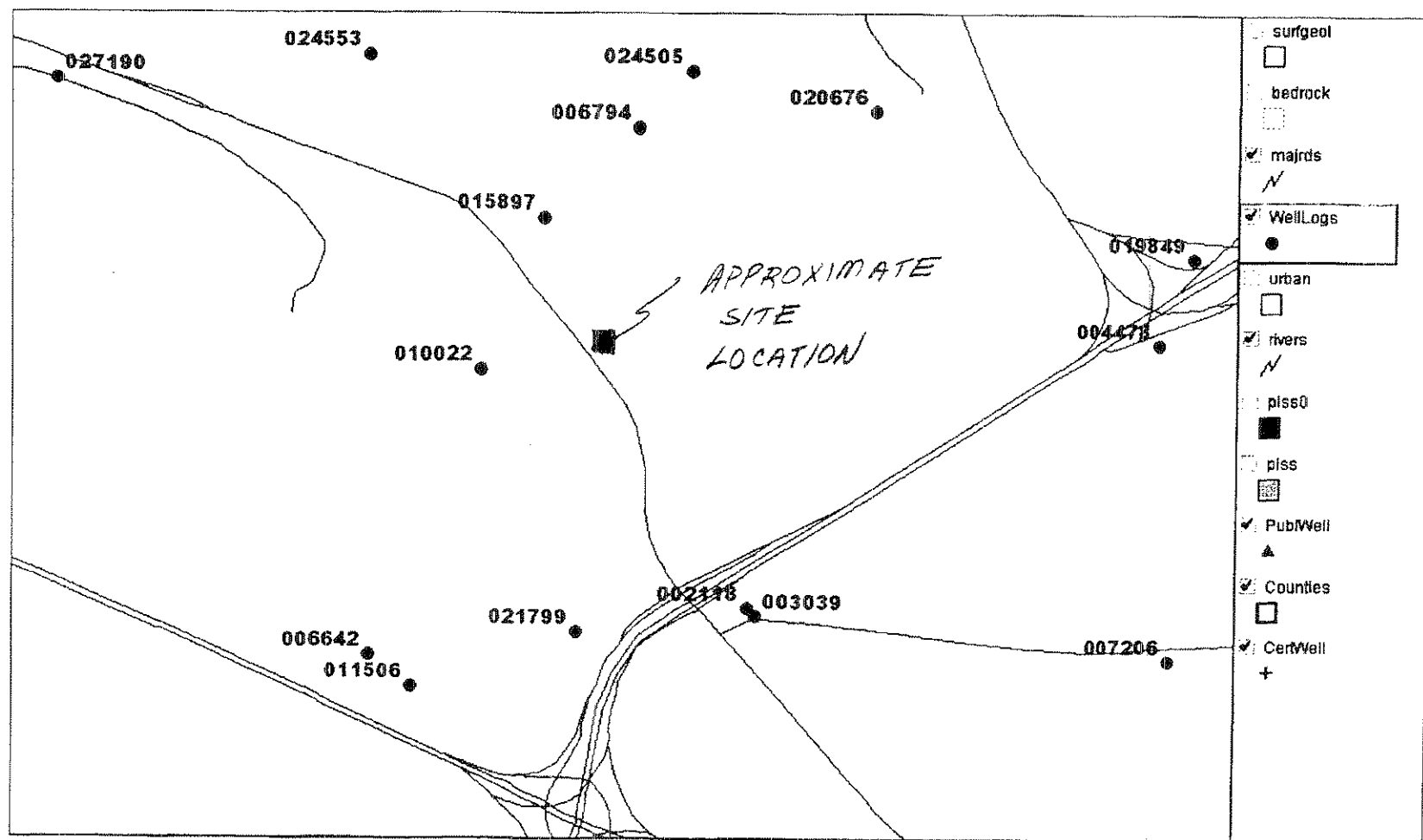


Figure 11

Most favorable area for development of high-yield wells in bedrock aquifers (differentiated by water quality and not by absence of high-yield aquifers).



MEGA "LOGGED WELLS"
 OUTPUT
 ARPK 5/13/05

EXPOSURE MODEL

(Part 6)

PM Resources, Inc.
13001 St. Charles Rock Road
Bridgeton, MO 63044

May 2005

Prepared for:

PM Resources, Inc.
13001 St. Charles Rock Road
Bridgeton, MO 63044

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FIGURE

Figure 1 Discretization of Exposure Units

MAP

MEGA 2003.1

EXPOSURE MODEL

1.0 INTRODUCTION

This document presents the exposure model (EM) for the PM Resources, Inc. site in Bridgeton, Missouri. The EM identifies the potential receptors and the exposure pathways under current and anticipated future conditions. This section also discusses ecological risk.

2.0 SITE DISCRETIZATION

For risk assessment purposes, the site was divided into unimpacted area and impacted area. The latter was divided into two exposure units due to (i) the large size of the site, (ii) varying concentration levels of chemicals detected in different areas, and (iii) differing depths to groundwater table across the site. The intent here is to discretize the site into exposure units that are relatively homogeneous in terms of exposure and risk characteristics. These exposure units are presented below and locations are indicated on Figure 6-1.

Unimpacted Area

The unimpacted area, approximately 460,000 ft², covers the portion of the site that has never been used for any industrial/commercial activities. The unimpacted area is bounded to the west by St. Charles Rock Road, to the south by Taussig Road, to the north by the adjacent undeveloped wooded property, and to the east by Exposure Units 1 and 2. This area is currently undeveloped grassy and wooded and the potential for buildings in the future is possible in the southern portion between the current buildings and St. Charles Rock Road. The northern portion is heavily wooded and topographically much lower than the developed areas of the site and would require clearing and significant fill prior to any future development. Access to this area is not controlled. This area covers approximately 460,000 ft².

Impacted Area

Exposure Unit 1 is bounded to the south by Taussig Road, to the northeast and northwest by Exposure Unit 2, and to the west by the unimpacted area. This area is primarily commercial manufacturing and includes the processing, storage, parking, and office areas including buildings. Access to this area is controlled. Exposure Unit 1 covers approximately 365,000 ft² of which approximately 80% of the area is paved. Paved areas include roads, parking areas, and outside processing and storage areas. The buildings are slab on grade construction.

Exposure Unit 2 is bounded on the west by Exposure Unit 1 and the unimpacted area and covers approximately 860,000 ft². To the east is property owned by Union Electric that has a substation and other electric distribution facilities. To the south is Taussig Road and to the north is the adjacent undeveloped wooded property. This exposure unit is mostly undeveloped, but includes two railroad spurs, entrance road, guard sheds,

storage building, and tank farm with 11 aboveground storage tanks (ASTs). Access to this area is controlled. Approximately 20% of the surface area is paved with asphalt and gravel in this exposure unit. Paved areas are associated with the storage building, tank farm, and entrance road. Approximately 80% of this area is not likely to be redeveloped in the future due to the locations of the railroad spurs and the heavily wooded topographically low northern portion of the area, that would require extensive clearing and significant fill for any future development. As of now PM Resources has no plans to develop this area.

3.0 LAND USE AND RECEPTORS OF CONCERN

3.1 Current and Future Land Use

Information about the land use is necessary to identify the receptors of concern and was used in the development of the EMs. Currently, the site is used for commercial manufacturing and industrial uses. The site use is expected to remain industrial and commercial manufacturing in the future.

3.2 Current and Future Receptors of Concern

For current conditions, a non-residential worker was identified as the primary receptor for Exposure Units 1 and 2. Currently, there are no known, major construction activities; therefore the construction worker is not a receptor under current conditions. There are occasional visitors via controlled access to Exposure Units 1 and 2, but their exposure frequency and duration is significantly less than that for the non-residential worker; hence, the risk to the visitor will be lower than to the non-residential worker and will not be quantitatively evaluated.

Since the reasonable future land use for each of the two exposure units is likely to remain the same as the current land use, future receptors of concern include the non-residential worker for Exposure Units 1 and 2. However, there may be construction activities in the future; hence, the construction worker is also a potential future receptor of concern. For evaluating exposures to the construction worker, the typical depth to construction is assumed to be about 10 feet. Most of the utilities on-site are about 4 ft bgs (below ground surface).

4.0 EXPOSURE MODELS

The EM identifies the chemical source, release mechanisms, potential receptors, and the media of concern. It identifies the combination of factors that could result in a complete exposure pathway and potential human uptake of chemicals from the source under consideration.

The EMs for receptors of concern in each exposure unit are presented in the following exhibits:

Exhibit 1 Exposure Model for Current/Future Non-Residential Worker in Exposure Unit 1			
No.	Exposure Pathway	C/NC	Justification
1.	Dermal contact with surficial soil*	C	Constituents have been identified in surficial soil in Exposure Unit 1 and the area may not be paved. Therefore, this exposure pathway is considered complete.
2.	Ingestion of surficial soil*	C	Constituents have been identified in surficial soil in Exposure Unit 1 and the area may not be paved. Therefore, this exposure pathway is considered complete.
3.	Outdoor inhalation of vapors and particulates from surficial soil*	C	Vapors from surficial soil may be released upwards into the ambient air. Therefore, this exposure pathway is complete.
4.	Outdoor inhalation of vapors from subsurface soil	C	Vapors from subsurface soil may be released into the ambient air. Note this pathway is generally not the "risk driver" due to considerable mixing and dilution in ambient air (relative to the indoor air pathway) and especially if indoor inhalation is also considered.
5.	Indoor inhalation of vapors from subsurface soil	C	There are currently buildings in Exposure Unit 1 and subsurface soil is impacted. Therefore, this pathway is complete. Also there is potential for future buildings.
6.	Indoor inhalation of vapors from groundwater	C	There are currently buildings in Exposure Unit 1 and groundwater is impacted. Therefore, this pathway is complete. Also there is potential for future buildings.
7.	Outdoor inhalation of vapors from groundwater	C	Vapors from groundwater may be released into the ambient air. However, this pathway is not evaluated quantitatively. Note this pathway is generally not the "risk driver" due to considerable mixing and dilution in ambient air (relative to the indoor air pathway).
8.	Ingestion of groundwater	NC	Groundwater will not be used as a source of drinking water for the foreseeable future. Workers are not likely to ingest groundwater. Therefore this exposure pathway is not complete.
9.	Dermal contact with groundwater	NC	Groundwater will not be used as a source of drinking water for the foreseeable future. Workers are not likely to contact groundwater. Therefore this exposure pathway is not complete.
Notes: NC-Not Complete C-Complete			

- Pathways highlighted in bold indicate that the pathway is considered to be complete and will be quantitatively evaluated.

* This pathway would be complete only if the surface is unpaved or not covered with asphalt.

Exhibit 2 Exposure Model for Future Construction Worker in Exposure Units 1 and 2			
No.	Exposure Pathway	C/NC	Justification
1.	Dermal contact with soil	C	Constituents have been identified in soil. Therefore, this exposure pathway is considered complete.
2.	Ingestion of soil	C	Constituents have been identified in soil on-site. Therefore, this exposure pathway is considered complete.
3.	Outdoor Inhalation of vapors and particulates from soil	C	Constituents have been identified in soil on-site. Therefore, this exposure pathway is considered complete.
4.	Indoor inhalation of vapors from soil	NC	Typically construction would not be expected to occur indoors over an extended period of time. Therefore, this exposure pathway is not considered to be complete.
5.	Indoor inhalation of vapors from groundwater	NC	Typically construction would not be expected to occur indoors over an extended period of time. Therefore, this exposure pathway is not considered to be complete
6.	Dermal contact with groundwater	C	Data indicates that the depth to groundwater fluctuates around 3 feet bgs which is above the anticipated depth of construction. Therefore, this pathway is considered complete.
7.	Outdoor inhalation of vapors from groundwater	C	Groundwater is impacted, and vapors may migrate upwards through the vadose zone. Therefore, this pathway is considered complete.
Notes: NC-Not Complete C-Complete			

- Pathways highlighted in bold indicate that the pathway is complete and will be quantitatively evaluated.

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Exhibit 3 Exposure Model for Current/Future Non-Residential Worker in Exposure Unit 2			
No.	Exposure Pathway	C/NC	Justification
1.	Dermal contact with surficial soil*	C	Constituents have been identified in surficial soil in Exposure Unit 2 and the area is mostly not paved. Therefore, this exposure pathway is considered complete.
2.	Ingestion of surficial soil*	C	Constituents have been identified in surficial soil in Exposure Unit 2 and the area is mostly not paved. Therefore, this exposure pathway is considered complete.
3.	Outdoor inhalation of vapors and particulates from surficial soil*	C	Vapors from surficial soil may be released upwards into the ambient air. Therefore, this exposure pathway is complete.
4.	Outdoor inhalation of vapors from subsurface soil	C	Vapors from subsurface soil may be released into the ambient air. Note this pathway is generally not the "risk driver" due to considerable mixing and dilution in ambient air (relative to the indoor air pathway) and especially if indoor inhalation is also considered.
5.	Indoor inhalation of vapors from subsurface soil	C	There is currently a building in Exposure Unit 2 and subsurface soil is impacted. Therefore, this pathway is complete. Also there is potential for future buildings.
6.	Indoor inhalation of vapors from groundwater	C	There is currently a building in Exposure Unit 2 and groundwater is impacted. Therefore, this pathway is complete. Also there is potential for future buildings.
7.	Outdoor inhalation of vapors from groundwater	C	Vapors from groundwater may be released into the ambient air. However, this pathway is not evaluated quantitatively. Note this pathway is generally not the "risk driver" due to considerable mixing and dilution in ambient air (relative to the indoor air pathway).
8.	Ingestion of groundwater	NC	Groundwater will not be used as a source of drinking water for the foreseeable future. Workers are not likely to ingest groundwater. Therefore this exposure pathway is not complete.
9.	Dermal contact with groundwater	NC	Groundwater will not be used as a source of drinking water for the foreseeable future. Workers are not likely to contact groundwater. Therefore this exposure pathway is not complete.
Notes: NC-Not Complete C-Complete			

- Pathways highlighted in bold indicate that the pathway is considered to be complete and will be quantitatively evaluated.

* This pathway would be complete only if the surface is unpaved or not covered with asphalt.

5.0 EVALUATION OF GROUNDWATER USE PATHWAY

Based on the evaluation of the groundwater use pathway as per the Missouri Risk-Based Corrective Action (MRBCA) process, the groundwater use pathway is incomplete. Refer to Part 5 of this submittal.

6.0 SUMMARY OF COMPLETE EXPOSURE PATHWAYS

The complete routes of exposure (discussed in Section 4.0) that will be quantitatively evaluated are summarized below:

Current/Future On-site Non-residential Worker in Exposure Units 1 and 2

- Dermal contact with surficial soil,
- Ingestion of surficial soil,
- Outdoor inhalation of vapors and particulates from surficial soil,
- Indoor inhalation of vapors from subsurface soil, and
- Indoor inhalation of vapors from groundwater.

Future On-site Construction Worker in Exposure Units 1 and 2

- Dermal contact with soil,
- Ingestion of soil,
- Outdoor inhalation of vapors and particulates from soil,
- Dermal contact with groundwater, and
- Outdoor inhalation of vapors from groundwater.

7.0 ECOLOGICAL RISK

Due to the commercial/industrial nature of the site and surrounding vicinity and the non-existence of surface water bodies in close proximity to the PM Resources site, it is currently not anticipated that ecological receptors will be at risk due to the chemicals of concern at the PM Resources site. However, as part of the risk evaluations, the ecological checklist evaluations will be performed. Preliminary evaluations performed to date are presented below:

The following data layers of the Missouri Environmental Geology Atlas (MEGA) were reviewed for features indicating the presence of Karst topography: “sink hole”, “springs”, and “cave area.” The “cave area” data layer shows a 5-mile buffer around known cave locations to provide an indication of when a potentially sensitive Karst environment may be within 5 miles. This review provided the following results (MEGA 2003.1 Map):

- The nearest sinkhole was approximately 3 miles from the site.
- There was no springs indicated in the area of the site (i.e., the nearest recorded spring is more than 3 miles from the site).
- The PM Resources site is shown as being outside the 5-mile buffer area around known cave locations.

8.0 REFERENCES

Department of Missouri Risk-Based Corrective Action Technical Guidance. MDNR, February 2005. MEGA Version 2003-1.

FIGURE

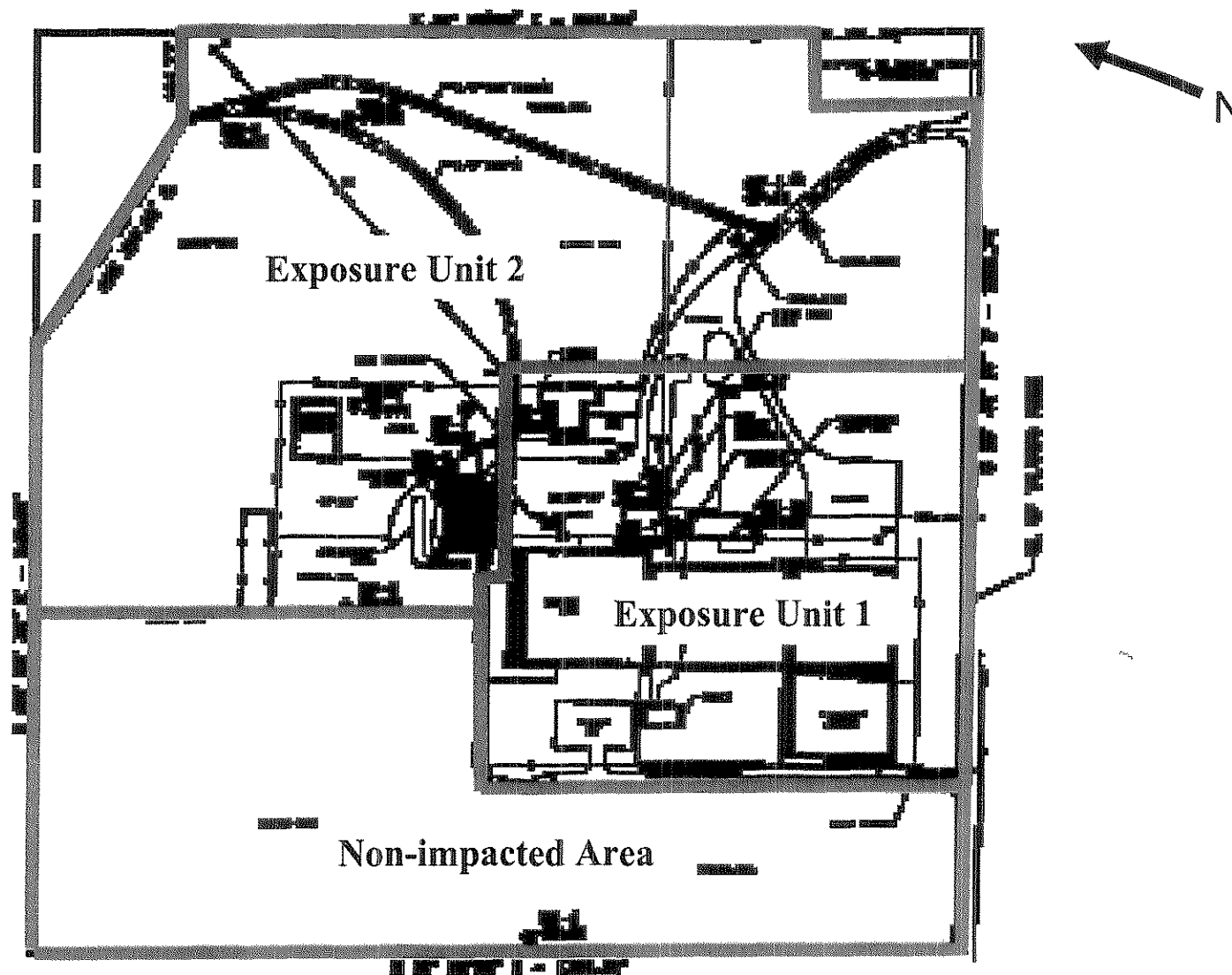
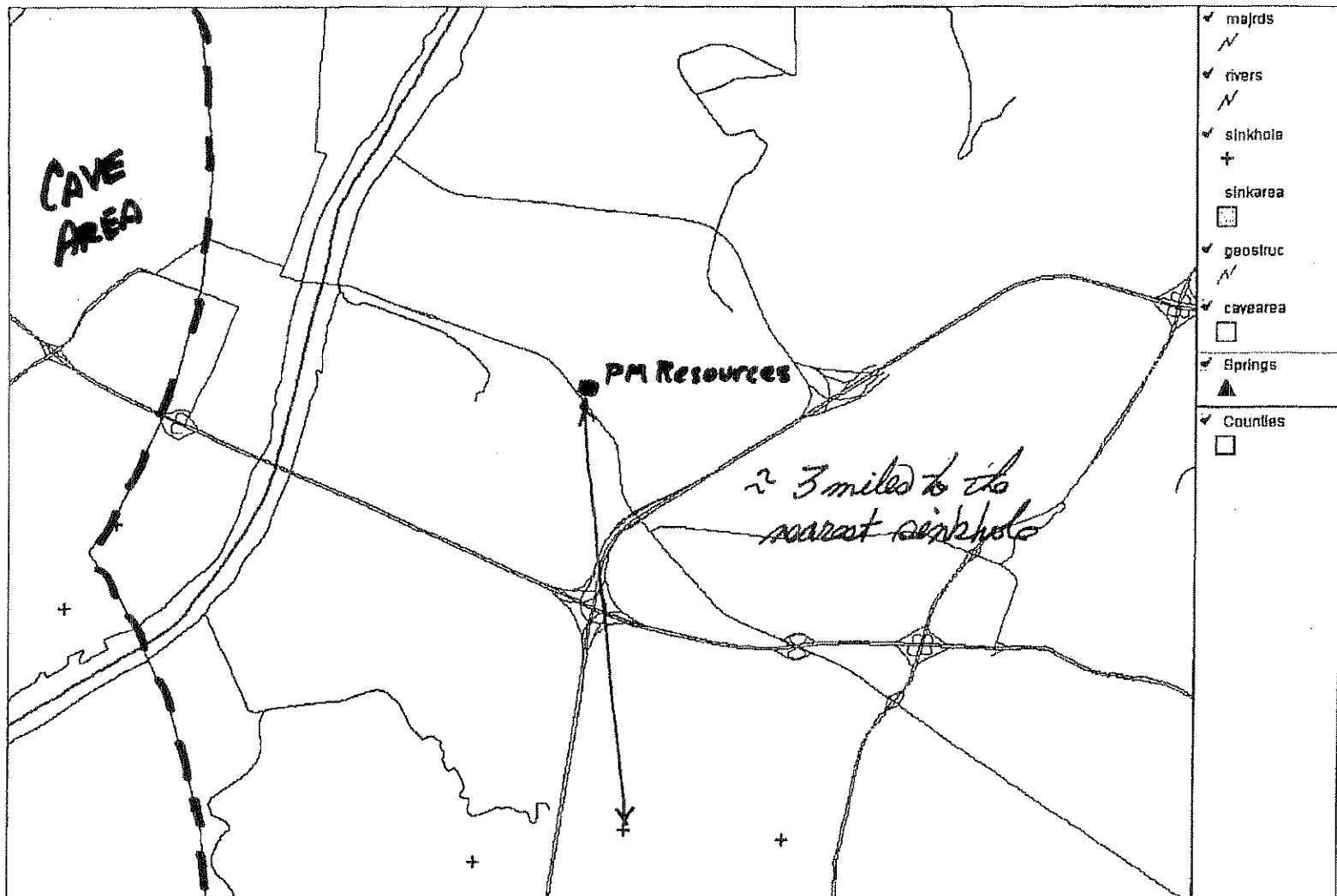


Figure 6-1. Discretization of Exposure Units
PM Resources, Inc., Bridgeton, Missouri



KRP
2/1/05
MEGA 2003.1

1ST QUARTER 2005 GROUNDWATER MONITORING REPORT

April 2005

Prepared for:

PM Resources, Inc.
13001 St. Charles Rock Road
Bridgeton, Missouri



3/31/2005

I have reviewed the report referenced above and other supporting project information. The report findings and recommendations are based on a sound interpretation of the available geologic data.

Keith Piontek P.E.
E-25313

JANUARY 2005 GROUNDWATER MONITORING REPORT

**PM Resources, Inc.
RCRA Permit Number: MOD085908259**

April 2005

Prepared for:
**BP
2240 Bluestone Drive
St. Charles, MO 63303**

And

**PM Resources, Inc.
13001 St. Charles Rock Road
Bridgeton, Missouri 63044**

Prepared by:
**Risk Assessment & Management Group, Inc.
5433 Westheimer, Suite 725
Houston, Texas 77056
Tel: (713)784-5151
Fax: (713) 784-6105**

In co-operation with:
**Sitex Environmental, Inc.
715 Geyer Avenue
St. Louis, MO 63104
(314) 421-0600**

April 8, 2005

Darleen Groner
Missouri Department of Natural Resources
1738 East Elm Street
Jefferson City, MO 65101

**RE: January 2005 Groundwater Monitoring Report
PM Resources, Inc.
RCRA Permit #MOD085908259
13001 St. Charles Rock Road
Bridgeton, Missouri 63044**

Dear Ms. Groner:

Enclosed is the January 2005 Groundwater Monitoring Report for the PM Resources, Inc. (PMR) facility in Bridgeton, Missouri. Field sampling activities were performed January 6 – 12, 2005 by Sitex Environmental, Inc.

Please note that the Environmental Science Corporation laboratory report for the January 2005 sampling event is located in a sleeve on compact disk (CD) in Appendix B. The ESC laboratory report is dated April 7, 2005, which includes updated revisions to the February 28, 2005 version previously submitted to the MDNR on CD by PM Resources. The revisions include changes to the VOC results for monitoring wells MW9 – MW13 and MW11 Duplicate. Also, laboratory qualifiers also changed for SVOCs in MW10.

We appreciate the opportunity to provide this report to the MDNR on behalf of PM Resources, Inc. and BP. If you have any questions regarding the report, please contact us at 713-784-5151.

Sincerely,

Risk Assessment and Management (RAM) Group, Inc.

Kendall L. Pickett
Senior Geologist

Atul M. Salhotra, PhD
President

cc: Louis A. Dell'Orco (PMR)
William Bush (PMR)
Thomas G. Tunnicliff (BP)
John W. Traeger (Gallop, Johnson & Neuman, LC)

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APPENDICES

Appendix A	Groundwater Monitoring Well Sampling Logs and Daily Field Logs
Appendix B	Laboratory Analytical Report – January Quarter 2005 and Historical Groundwater Monitoring Summary Tables (both on CD in sleeve), and Chain-of-Custody/Sample Receipt Documentation

1.1 SITE LOCATION

PM Resources, Inc. (site) is located at 13001 St. Charles Rock Road, Bridgeton, Missouri. The site is located approximately one mile north of the intersection of Highway I-270 and St. Charles Rock Road in Bridgeton, Missouri. More specifically, the property is located approximately 100 feet northeast of the intersection of St. Charles Rock Road and Taussig Road. Found on the St. Charles, Missouri 7.5-minute USGS topographic quadrangle map, the site exists in Section 34, Township 47N, Range 5E at latitude N38°46'14" and longitude 90°26'20"W (Figure 1-1).

1.2 RCRA PERMIT NUMBER

Resource Conservation and Recovery Act permit number for the site is MOD085908259.

1.3 SETTING

The property is located within an area of Bridgeton, Missouri that is primarily occupied by light industrial properties. Light industrial properties are located to the northwest, east and southeast. Farmland and a Union Electric substation are located to the east of the property; and West Lake and Laidlaw Bridgeton Landfills are located immediately across St. Charles Rock Road to the southwest. A map showing the layout of the subject site is presented in Figure 1-2.

P.M. Resources is located in an upland/lowland transitional area that borders the Missouri Bottoms and lies approximately two miles from the Missouri River. The land surface slopes gently from the southeast to the northwest in the immediate site area (approximately a 7-percent slope). The lowland area between the site and the Missouri River is very flat and is subject to flooding.

Review of geologic maps of the general area indicates that the site's overburden consists of a thin layer of clayey loess that is underlain by Mississippian limestone (Osagean Series). On-site subsurface investigations have located bedrock at depths ranging to 35 feet but it is typically found at a depth of 10-12 feet in the areas of concern.

1.4 OBJECTIVE OF THIS REPORT

This report presents the results of the January 2005 groundwater sampling event. Detailed analysis of this data will be included in the ongoing risk assessment for this site.

As part of previous environmental investigations, 13 monitoring wells (labeled MW1 through MW13) have been installed at the project site (See Figure 1-2 for locations). Groundwater data has been collected at the site since 1999. Based on the June 4, 2004 Groundwater Sampling and Analysis Plan (SAP), groundwater monitoring was performed in January 2005, at the request of the Missouri Department of Natural Resources (MDNR) as per the MDNR SAP Approval With Modifications Letter (SAP Approval) dated December 7, 2004, to investigate groundwater conditions at the site.

The January 2005 groundwater sampling event was performed by Sitex Environmental, Inc. personnel. Kris Krump-Mitchell of the MDNR was on site to observe sampling activities on January 6, 2005. As per the SAP Approval, a sample was collected before and after monitoring well redevelopment because of the potential for poor recharge in some monitoring wells based on past experience.

This report details the groundwater monitoring event conducted in January 2005. The groundwater monitoring field activities began January 6, 2005 and were completed January 12, 2005. Detailed information associated with well conditions, well depths, groundwater depths, well redevelopment including total volume purged, and sampling can be referenced in the Groundwater Monitoring Well Sampling Logs in Appendix A of this report.

2.1 MONITORING WELL CONDITIONS

Prior to sampling, a visual well integrity inspection was performed. This involved checking the readability of well numbers, the condition of well plugs and locks, and the condition of the area surrounding each well. See the Groundwater Monitoring Well Sampling Logs in Appendix A for the results of the well integrity inspection. Based on the field observations the following wells need top plugs, locks, etc.:

- MW1 – needs lock,
- MW3 – needs lock,
- MW6 – needs new plug,
- MW7 – surrounding ground surface needs to be built up to just below top of manway cover,
- MW11 – needs new plug, and
- MW13 – needs new plug.

PM Resources (PMR) is in the process of remedying the above deficiencies.

Depths to groundwater and well bottoms were measured using a Leupold & Stevens Water Contact Meter Model L-50 (to the nearest 0.01 foot). The meter was decontaminated prior to use in each well using an Alconox soap wash and deionized water rinse. Approximate bedrock depths are those presented in the SAP Approval letter except for MW9 (see explanation in Section 2.4.2).

2.1.1 Monitoring Well Depths

The MDNR has mentioned concern over discrepancies regarding well depths from the following data sources:

1. Field Boring Logs
2. Drillers Notes
3. Boring Logs
4. Well Completion Reports
5. Monitoring Well Certification Records

RAM Group has compiled the available well depth data (Table 2-1) from the above sources, as well as the available screened interval data (Table 2-2), assuming the bottom of the screened intervals should be consistent with the well depths. The data from the various sources and the January 2005 monitoring well depth measurements after well redevelopment were compared and considered in the evaluation.

Typically, Field Boring Logs and Drillers Notes are the most reliable sources since those data are collected in the field at the time of the well installations. The actual well depths are not necessarily measured accurately when wells are installed, but are often estimated to the nearest foot based on the amount of screen and riser used at each well location. It is not uncommon to take actual well depth measurements at a later date after all the wells have been installed. These measurements are usually to the nearest 1/10th foot or 1/100th foot. The available data includes Well Completion Reports for monitoring wells MW4 through MW13. As illustrated on Tables 2-1 and 2-2, those data are measured to 1/10th – 1/100 foot. This indicates to us that actual well depth measurements were made to prepare the Well Completion Reports; otherwise the depths would be to the nearest foot as indicated from the other data sources. No Well Completion Reports for MW1, MW2A, and MW3 are available. The well construction information for those wells is on the Boring Logs to the nearest foot.

In comparing the well depth data from the Well Completion Records to the actual well depths measured during the January 2005 Sampling Event after redevelopment of the monitoring wells, these data are very close (within 0.04 foot) or equal for MW4, MW5, MW6, MW7, MW11, and MW12. Also, for MW13 these data were within 0.25 foot. It is our opinion that the Well Completion Records well depths for these wells should be used.

It appears that for MW1, MW2A, and MW3, the well depths were estimated to the nearest foot from the various sources. During the January 2005 Sampling Event after well redevelopment, the Sitex field professional was very confident that the probe for the meter used to measure the well depths was coming into contact with the bottom cap of each monitoring well. Therefore, for these monitoring wells (MW1, MW2A, and MW3), it is our opinion that the January 2005 sampling event well depths after well redevelopment should be used.

For MW9 and MW10, the well depths measured during the January 2005 sampling event after well redevelopment, were very close (within 0.1 foot) to the Monitoring Well Certification Records, which also matched several sources of data for those wells. It is our opinion that the Monitoring Well Certification Records well depths should be used for monitoring wells MW9 and MW10.

The well depths recommended for use are highlighted in Table 2-1. The variance between the recommended well depths and the Monitoring Well Certification Records is less than 2.1 feet with two wells equal to the Certification Records, four well less than one foot difference, six well less than two feet difference, and one well 2.1 feet difference.

Table 2-2 shows the screened intervals highlighted that in our opinion should be used, and the bottom of these screened intervals are consistent with the recommended well depths in Table 2-1.

For MW1, it is our opinion that the 10-foot screened interval that should be used extends from 10.28 – 20.28 feet. For MW2A, it is our opinion that the 12-foot screened interval that should be used extends from 6.28 – 18.28 feet. For MW3, it is our opinion that the 12-foot screened interval that should be used extends from 6.17 – 18.17 feet. These are consistent with the recommended well depths in Table 2-1.

Table 2-3 lists depths and elevations for each monitoring well.

2.2 REDEVELOPMENT

As mentioned previously all monitoring wells were sampled prior to and after redevelopment of each monitoring well due to a history of poor recharge in some wells. Redevelopment was conducted on January 11, 2005 to dislodge and purge sediments from the bottom of each well and was accomplished by mechanically surging with dedicated disposable loaded bailers (as agreed to by the MDNR). Each well was surged throughout the water column a minimum of five times. Suspended sediment content decreased during redevelopment until relatively clear water was being removed at the end of redevelopment except for MW12, which still had some evidence of suspended sediment. Static water levels and total well depths were remeasured prior to the post-redevelopment sampling. The Sitex field professional reported that he was confident that the probe on the meter used to measure the well depths after redevelopment was reaching the bottom cap of each monitoring well.

Purged waters were contained in 55-gallon drums for future disposal with PM Resources' hazardous waste stream by incineration.

2.3 SAMPLING

All wells were sampled twice in accordance with the SAP Approval. The pre-redevelopment sampling was conducted on January 6th and 7th, 2005, in case slow recharge in low-yielding wells would not produce adequate volumes for sample collection after well redevelopment. Sampling was initiated using dedicated disposable bailers at the least impacted well and progressed towards the most impacted well as determined by historic sampling records. Sampling depths were in accordance with the depths presented in the SAP Approval. During pre-redevelopment sampling, the following groundwater conditions were noted in field logs:

- MW4 – light brown, low silt, no odor;
- MW5 – brown with moderate silt, no odor;
- MW6 – dark gray/blue with moderate silt content and slight hydrocarbon odor;
- MW9 – light brown, low silt, no odor; and
- MW11 – moderate hydrocarbon odor and sheen.

No notes regarding groundwater conditions were present in the field logs for the other monitoring wells.

The post-redevelopment sampling was conducted on January 12, 2005 after well redevelopment on the previous day. All wells had recharged sufficiently following redevelopment and were successfully sampled. Sampling was conducted using dedicated, disposable bailers beginning with monitoring well MW1. Sampling was performed at the first occurrence of groundwater in each monitoring well. Matrix spike and matrix duplicate samples were collected from monitoring well MW10. A duplicate sample was collected from monitoring well MW11.

Standard chain-of custody (COC) procedures were followed during sample transfer. A complete COC record accompanied each sample shipment. The COC record included Sample IDs, sample type, matrix type, date, number and types of containers, types of analysis, preservatives used, name of sampler, signatures of persons involved in the chain of possession, and other pertinent information. Additional details can be found in Appendix A including sampling depths and sampling times on the Groundwater Monitoring Well Sampling Logs. COC documentation is provided in Appendix B.

A field logbook was maintained documenting the redevelopment and sampling process and pertinent information associated with the sample collection process.

2.4 GROUNDWATER FLOW AND BEDROCK ORIENTATION

Groundwater and bedrock depth and elevation data are compiled in Table 2.4, and used to prepare a groundwater potentiometric surface map and top of bedrock map to evaluate groundwater flow and bedrock orientation at the site.

2.4.1 Groundwater Flow

Using the groundwater depths (converted to elevations) measured prior to the pre-redevelopment sampling, a groundwater potentiometric surface map was prepared for the uppermost water-bearing zone (Figure 2-1). Based on Figure 2-1, the groundwater flow is towards the northwest at an approximate gradient of 0.029 feet per foot (ft/ft). This is consistent with previous data.

2.4.2 Bedrock Orientation

Note that in preparing the top of bedrock map, a bedrock depth of 7.5 feet for MW9 was used rather than the 6 feet in the SAP Approval. Table 2-5 presents a compilation of the available data for depth to bedrock from four sources and compared those data to the SAP Approval depths. Based on the available data for MW9, it is our opinion that a bedrock depth of 7.5 feet is more consistent with the data from the available sources.

Using the bedrock depths (converted to elevations) presented in the SAP Approval (except for MW9), a top of bedrock map was prepared (Figure 2-2). This figure provides an interpretation of the bedrock surface topography based on the available data. It should be viewed as a simplistic representation of the actual bedrock surface topography, which is often highly irregular. Based on Figure 2-2, there is a bedrock high oriented northeast-southwest centered under Building No. 2. The bedrock dips away from this high towards the northwest at an approximate gradient of 0.049 ft/ft, and towards the southwest at an approximate gradient of 0.023 ft/ft. Although, the specific top of bedrock elevations at some of the monitoring wells vary from previous reports due to the use of different bedrock depths; the dip orientation of the bedrock is consistent with the previous reports.

2.5 SAMPLE ANALYSIS AND RESULTS

Groundwater samples have been analyzed for the following parameters:

Parameter	Method
Total (unfiltered) and Dissolved (filtered) RCRA Metals (250 mL HDPE* and HDPE Caps with F2-17 inserts and preserved with HNO ₃ for totals only)	Metals – EPA Method 6010B, Mercury – EPA Method 7470A
Volatile Organic Compounds (VOCs) (40 mL amber glass vials with Teflon-lined caps preserved with HCl, No headspace)	EPA Method 8260B
Semi-volatile Organic Compounds (SVOCs) (1 L amber glass jar with Teflon-lined caps. No preservative)	EPA Method 8270C
Chlorinated Pesticides (1 L amber glass jar with Teflon-lined caps. No preservative)	EPA Method 8081A
Chlorinated Herbicides (1 L amber glass jar with Teflon-lined caps. No preservative)	EPA Method 8151
Organophosphorus Pesticides (1 L amber glass jar with Teflon-lined caps. No preservative)	EPA Method 8141

* HDPE: High density polyethylene

The Environmental Science Corporation (ESC) analytical data report dated April 7, 2005 for the groundwater samples collected on January 12, 2005 are provided on a CD and are summarized in the historical tables also on the CD in Appendix B.

During the January 2005 groundwater sampling event, the laboratory analyzed 218 chemicals in the groundwater samples collected from 13 monitoring wells, consisting of:

- 8 Metals (dissolved and total fractions),
- 87 Volatile organic compounds (VOCs),
- 67 Semi-volatile organic compounds (SVOCs),
- 20 Chlorinated pesticides,
- 26 Organophosphorus pesticides, and
- 10 Chlorinated herbicides.

Of the organic compounds, three chemicals were analyzed by both VOC and SVOC methods. These are 1,2,4-trichlorobenzene, hexachlorobutadiene (hexachloro-1,3-butadiene), and naphthalene. Thus in all, 215 different chemicals were analyzed.

Of the 215 different chemicals analyzed, 28 different chemicals were detected as shown in Table 2-6. Note that naphthalene was detected by both VOC and SVOC methods in monitoring wells MW6 and MW11. Table 2-7 shows the number of chemicals detected in each monitoring well. The monitoring wells with the most different chemicals detected in descending order were MW6 with 17, MW2A with 16, MW3 with 15,

MW11Dup with 11, and the rest of the monitoring wells had 3 to 9 different chemicals detected.

2.5.1 Metals

The dissolved concentration analysis detected three metals:

- Barium in all 13 wells,
- Chromium in MW6, and
- Lead in MW5 and MW12.

The total concentration analysis detected five metals:

- Arsenic in MW4, MW6, MW9, MW10, MW11Dup, MW12, and MW13,
- Barium and chromium in all 13 wells and MW11Dup,
- Lead in all wells except MW7, MW8, MW10, and MW11Dup, and
- Mercury in MW5 and MW12.

In all cases except two, the total concentrations were greater than the dissolved concentrations including several that were detected in the total concentration analysis and not detected in the dissolved concentration analysis. One exception was barium in MW5, where the dissolved concentration (1.3 milligrams per liter – mg/L) was greater than the total concentration (0.74 mg/L). The other exception was barium in MW11, where the total and dissolved concentrations were equal (1.0mg/L). Refer to Table 2-6. Typically, total concentrations are higher than dissolved concentrations due to suspended sediments usually present in the unfiltered sample used for total concentrations analysis.

2.5.2 Volatile Organic Compounds (VOCs)

Seventeen chemicals were detected by the VOC analysis as seen on Table 2-6. VOC detects were limited to six of the 13 monitoring wells (MW1, MW2A, MW3, MW6, MW8, and MW11 including its Duplicate). The most VOCs were detected in monitoring wells MW2A, MW3, and MW6. No VOCs were detected in the groundwater samples collected from monitoring wells MW4, MW5, MW7, MW9, MW10, MW12, and MW13.

2.5.3 Semi-Volatile Organic Compounds (SVOCs)

Three chemicals were detected by the SVOC analysis (2-methylnaphthalene, bis(2-ethylhexyl)phthalate, and naphthalene). SVOCs were detected in only three monitoring wells (MW2A, MW6, and MW11 including its Duplicate) with 2 to 3 SVOCs each.

2.5.4 Chlorinated Pesticides

Three chlorinated pesticides were detected (chlordan, gamma-BHC (lindane), and toxaphene). Chlordan was only detected in monitoring well MW6. Gamma-BHC (lindane) was detected in two monitoring wells (MW11 including its Duplicate and

MW13). Toxaphene was detected in seven of the 13 monitoring wells (MW1, MW2A, MW3, MW7, MW8, MW10, and MW11Dup).

2.5.5 Organophosphorus Pesticides

One organophosphorus pesticide (diazinon) was detected in only monitoring well MW11 including its Duplicate.

2.5.6 Chlorinated Herbicides

No chlorinated herbicides were detected.

2.6 QUALITY ASSURANCE AND CONTROL

Specific controls were implemented during the groundwater monitoring activities to ensure sample quality and to avoid false positives or false negatives during data acquisition. Quality Assurance/Quality Control (QA/QC) procedures were performed in general accordance with SAP and SAP Approval, with some exceptions. The following text presents QA/QC activities performed and results.

2.6.1 Holding Times

In comparing the date sampled (January 12, 2005) with the dates of analysis on the laboratory Report of Analysis (pages 8-105 of the laboratory report in Appendix B), it appears that some SVOCs (7 days) and all the Chlorinated Pesticides (7 days) analyses had exceeded holding times. However in discussions with lab personnel, the SVOCs and Chlorinated Pesticides had been extracted within the acceptable holding times; therefore, the analysis holding times were not exceeded.

2.6.2 Preservation of Samples

All samples were preserved cold while awaiting transfer to the laboratory, VOC samples were collected without headspace in order to minimize volatilization of organic constituents, and specific preservatives were added to total metals and VOC samples as shown in Section 2.5 above and on the Chain-of-Custody documents.

2.6.3 Field and Trip Blanks

No field blanks, field equipment blanks, or trip blanks were collected/prepared. Procedures have been implemented to correct this oversight in the future.

2.6.4 Method Blank

Acetone and tetrahydrofuran were reported at elevated detection limits due to method blank contamination. Laboratory personnel stated that this was likely due to construction that was being performed in a nearby room and these chemicals were present in the glues

being used to connect PVC piping. Their presence resulted in increased dilution factors and higher detection limits.

2.6.5 Matrix Spike and Matrix Duplicate

Matrix spike and matrix spike duplicate samples were collected from MW10. See laboratory QA/QC for discussion and results (Appendix B).

2.6.6 Tentative Identified Compounds (TICs)

TICs were identified in each monitoring well sample during the SVOC analysis (Table 2-8). The number of TICs identified varied from one in monitoring wells MW4, MW5, MW7, and MW13 to seven in the MW11-Duplicate. Two TICs were identified in MW3, MW9, and MW12. Three TICs were identified in MW1, MW2A, MW8, and MW10. Six TICs were identified in MW6 and MW11.

2.6.7 Chain-of-Custody (COC) Review

The COC form was missing sample times which were submitted separately by email (See Appendix B). The sample containers for SVOCs indicated 2-liter containers on the COC; however, laboratory personnel confirmed that this was a misprint and actually two 1-liter containers were submitted for SVOCs. There is no impact to the results.

There were inconsistencies between the COC form and the Laboratory Login Confirmation Report related to preservatives and container sizes. Laboratory personnel confirmed that the COC form was correct and the Login Confirmation Report was in error except for the SVOC containers discussed above. There is no impact to the results.

2.6.8 Receipt of Samples at Lab

According to the laboratory narrative, all samples were received at the laboratory on January 13, 2005, at correct temperature, in correct containers and with correct preservatives.

2.6.9 Review of Target Analyte List

Based on a comparison of the January 2005 sampling event laboratory results to the existing historical database, 17 chemicals were missing in the January 2005 data that had been analyzed during one or more sampling events in the past. Based on discussions with Jeff Carr at ESC the following comments are presented. Of the 17 missing chemicals:

- One was a total, 1,4-dichloro-2-butane, which ESC reported as cis- and trans-.
- One was ethyl acetate. All previous analysis for this chemical by TekLab were non-detect. This chemical cannot be run by ESC using the methods specified in the SAP.
- One was 4-chloroaniline. 4-chloroaniline (8270) was included in the past four sampling events (5/02, 9/02, 12/02, 3/03) by ESC and was always non-detect.

TekLab also included it in the several sampling events prior to ESC's involvement and it was always non-detect.

- Two were alpha-chlordane and gamma-chlordane. However, chlordane was included in the January 2005 ESC results. Alpha-chlordane and gamma-chlordane were included in the previous March 2003 sampling event by ESC and were found to be non-detect in all samples.
- Twelve cannot be run by ESC due to the way their methods/equipment are setup and/or not having the appropriate standards. None of these remaining 12 chemicals were analyzed by ESC in the past four sampling events. These were included in some of the previous sampling events performed by TekLab, but these were always non-detect except for bentazon, which was detected once out of 16 samples. Bentazon was detected in the MW10 duplicate during the 4th Quarter 2002 sampling event at a concentration of 0.00218 mg/L.

Based on the above, in future monitoring one or more of these chemicals will be added if they are determined to be a chemical of concern.

2.6.10 Review of Detection Limits

For the most part the laboratory analysis results met the standard reporting limits (Estimated Quantitation Limits – EQLs) for the methods utilized. However, there were some chemicals for which dilutions were required (i) to accurately quantify the concentrations due to the level of concentration, or (ii) due to interference by other chemicals. Dilutions in turn caused the EQLs for specific chemicals to be elevated. Table 2-9 presents the chemicals with dilution factors greater than 1, and the associated elevated EQLs. In summary, the following monitoring wells had increased dilution factors and elevated EQLs as indicated below:

- MW1 – six VOCs (1 detected) and toxaphene (detected); however, two VOCs were detected in the method blank;
- MW2 – seven VOCs (1 detected) and toxaphene (detected); however, two VOCs were detected in the method blank;
- MW3 – one VOC and toxaphene (detected);
- MW6 – six VOCs (2 detected), chlordane (detected), and the entire Method 8141 run; however, two VOCs were in the method blank;
- MW7 – toxaphene (detected);
- MW8 – two VOCs (1 detected);
- MW11 – entire Method 8260B run (3 detected); and
- MW11 Duplicate – entire Method 8260B run (4 detected), gamma-BHC (detected), and toxaphene (detected).

2.6.11 Duplicates

A duplicate sample was collected for analysis from MW11. The detection limits for MW11 and its Duplicate were generally the same. Ten chemicals were detected in both MW11 and its Duplicate. The concentrations of nine of these chemicals varied by less

than a factor of 2. Gamma-BHC (Lindane) was 3.5 times higher concentration in the MW11 Duplicate when compared to MW11 (0.00077mg/L in MW11 vs. 0.0027 mg/L in Duplicate). Four chemicals were detected in either MW11 or its Duplicate, but not both. Three of these were detected at concentrations very close to the detection limit of the other sample. Toxaphene varied the most in that it was detected at a concentration of 0.064mg/L in the Duplicate and was ND in MW11 at a detection limit of 0.01mg/L.

Three chemicals were analyzed by both VOC and SVOC methods. These are 1,2,4-trichlorobenzene, hexachlorobutadiene (hexachloro-1,3-butadiene), and naphthalene. 1,2,4-trichlorobenzene and hexachlorobutadiene were non-detectable in all 13 samples and the duplicate. For both, the detection limit for the VOC method was an order of magnitude lower than for the SVOC method (0.001mg/L vs. 0.01mg/L), except for MW11 where the VOC detection limit was 1/5th that of that for SVOC.

The naphthalene detection limits were generally very close between the two methods, typically the VOC method had a detection limit ½ that of the SVOC method. Naphthalene was detected by both methods in MW6, MW11, and MW11Dup. The naphthalene results were very close between the two methods (varied by 0.03 - 0.12mg/L). Naphthalene was also detected in three other samples by either method, but not both. In these cases, two detects were very close to the other method detection limit and one was detected below the other method detection limit.

2.6.12 Laboratory Internal QA/QC

The following QA/QC parameters are presented within the laboratory analytic report (Appendix B):

- GC/MS instrument performance checks,
- Initial calibrations,
- Continuing calibrations,
- Surrogate spikes,
- Laboratory control samples,
- Regional QA/QC,
- Internal standards,
- Target compound identification,
- Compound quantitation and reported contract required quantitation limits,
- System performance, and
- Discussion of quality control exceedences or data outliers.

2.6.13 Overall Assessment of Data

The ESC case narrative, stated that based on internal QA/QC evaluations, all the data passed the data usability review with some bias'. Note that the case narrative is presented on Pages 2-6 in the 3,277 page data package dated April 7, 2005 included on the CD in Appendix B.

2.6.14 Reliability of Data

It is our opinion that the data is reliable and can be used in the risk assessment for this site.

2.7 DECONTAMINATION PROCEDURES

Detailed decontamination procedures are described in the SAP. The following comments provide a general description of measures taken to mitigate cross contamination between wells and from the natural environment.

The primary source of cross contamination from one well to the next is the use of non-dedicated equipment. During this sampling event, the meter used to measure water depths and well depths was the only non-dedicated equipment used in the wells. The meter was decontaminated before use in each well using a scrub brush in a solution of non-phosphate detergent in a stainless steel bucket followed by a deionized water rinse.

Contamination from the natural environment and other outside sources was controlled through the use of a plastic drop sheet next to each well for holding field equipment and disposable Nitrile rubber gloves.

Decon waters were contained with the well redevelopment purged waters in 55-gallon drums for future disposal with PM Resources' hazardous waste stream by incineration.

EVALUATION OF DATA

Evaluation of the data will be performed in accordance with the MDNR "*Departmental Missouri Risk-Based Corrective Action (MRBCA) Technical Guidance*" published February 18, 2005, with the intent to perform a risk-based evaluation and ultimately achieve closure of the site. As per the MRBCA document, PM Resources intends to perform the following 10 tasks:

- (i) Identify the chemicals of concern (COCs),
- (ii) Determination of plume delineation,
- (iii) Determination of plume stability,
- (iv) Determination of groundwater use,
- (v) Development of exposure model,
- (vi) Collection of additional soil data (if necessary),
- (vii) Completion of tiered risk assessment,
- (viii) Review and discussion of risk assessment with MDNR,
- (ix) Development of risk management plan per MRBCA document, and
- (x) Additional groundwater monitoring.

A meeting with MDNR has been proposed in late April 2005 to identify the specifics of these activities.

Table 2-3
January 2005 Monitoring Well Information
PM Resources, Inc., Bridgeton, Missouri

Well ID	Well Depth*	Pre-Redevelopment		Post-Redevelopment		Well Casing Elevation	Approx Bedrock Elevation
		Well Depth	Static Water Depth	Well Depth	Static Water Depth		
	(ft)						
MW1	20.28	20.27	9.53	20.28	10.8	449.10	438.10
MW2A	18.28	18.27	7.12	18.28	10.21	449.37	439.37
MW3	18.17	18.17	9.40	18.17	12.8	448.09	437.09
MW4	32.2	32.15	5.62	32.16	6.0	460.12	436.12
MW5	20.2	20.15	8.40	20.17	10.26	448.63	436.63
MW6	20.2	20.18	9.40	20.20	10.67	445.18	433.18
MW7	25.7	25.73	9.99	25.72	10.02	446.67	430.17
MW8	22.7	22.68	4.71	22.68	4.40	437.66	423.66
MW9	17	16.94	3.42	16.74	5.1	439.05	433.05
MW10	16	14.86	0.0	15.9	2.0	447.60	444.60
MW11	14.8	14.80	2.61	14.82	7.65	449.12	443.12
MW12	19.2	19.2	0.50	19.2	2.87	452.50	442.50
MW13	18.9	18.57	0.0	18.65	0.0	450.13	441.13

Notes:

All measurements in feet.

Elevations referenced to finished floor elevation of Buildings No. 2 and No. 3 (454.00 ft) during survey by John C. Bergh and Associates (registered Missouri land surveyor) on March 29, 2001. Note that MW8 elevation was adjusted 0.48-inch due to original survey to top of well cap rather than top of casing.

* Well depths recommended for use based on evaluation in Section 2.1.1.

Table 2-4
Bedrock and Groundwater Elevations - January 2005 Sampling Event
PM Resources, Inc., Bridgeton, Missouri

Monitoring Well	Top of Well Casing Elevation	Bedrock Depth+	Bedrock Elevation	Groundwater Depth*	Groundwater Elevation*
	(ft)				
MW1	449.1	~11	438.10	9.53	439.57
MW2A	449.37	~10	439.37	7.12	442.25
MW3	448.09	~11	437.09	9.4	438.69
MW4	460.12	~24	436.12	5.62	454.50
MW5	448.63	~12	436.63	8.4	440.23
MW6	445.18	~12	433.18	9.4	435.78
MW7	446.67	16.5	430.17	9.99	436.68
MW8	437.66	~14	423.66	4.71	432.95
MW9	439.05	~7.5	431.55	3.42	435.63
MW10	447.6	~3	444.60	0.0	447.60
MW11	449.12	6	443.12	2.61	446.51
MW12	452.5	10	442.50	0.5	452.00
MW13	450.13	~9	441.13	0.0	450.13

Notes:

+ MDNR Approval Letter except for MW9 (used 7.5 feet vs. 6 feet in MDNR Approval Letter)

* Prior to First Round of Sampling and Well Redevelopment

Table 2-5
Comparison of Depth to Bedrock from Various Sources
PM Resources, Inc., Bridgeton, Missouri

Monitoring Well	MDNR Approval Memo	MW Certification Records	Borelogs/Well Completion Reports	Drillers Notes	Field Logs
	(ft bgs)				
MW1	~11	11	11	~11	NA
MW2A	~10	9	9	~10	NA
MW3	~11	10.5	10.5	~11	NA
MW4	~24	25	NA	~24	~24
MW5	~12	12.5	11.5	NA	12
MW6	~12	12.5	11.5	NA	12
MW7	16.5	16.5	NA	16.5	NA
MW8	~14	14	14	~14	14
MW9	~6	7.5	7.5	NA	~7-8
MW10	~3	3	3	~3	3
MW11	6	6	6	NA	6
MW12	10	10	10	NA	9
MW13	~9	10	13	~9	9

Note:

NA - Not Available

Table 2-1
Comparison of Monitoring Well Total Depths from Various Sources
PM Resources, Inc., Bridgeton, Missouri

Monitoring Well	MDNR Approval Memo	MW Certification Records	Boring Logs	Well Completion Reports	2005 GW Monitoring		Drillers Notes	Field Boring Logs
					Total Depth Before Redevelopment	Total Depth After Redevelopment		
	(feet bgs)							
MW1	21	21	21	NA	20.27	20.28	21	NA
MW2A	20	20	20	NA	18.27	18.28	20	NA
MW3	20	20	20	NA	18.17	18.17	20	NA
MW4	34	34	NA	32.2	32.15	32.16	34	NA
MW5	21	21	NA	20.2	20.15	20.17	21	21
MW6	21	21	NA	20.2	20.18	20.20	21	21
MW7	26	26	NA	25.7	25.73	25.72	26	NA
MW8	24	24	NA	22.7	22.68	22.68	24	24
MW9	17	17	NA	17.75	16.94	16.94	17	17
MW10	16	16	NA	14.9	14.86	15.90	16	NA
MW11	16	16	NA	14.8	14.80	14.82	16	NA
MW12	20	21	NA	19.2	19.20	19.20	20	20
MW13	21	21	NA	18.9	18.57	18.65	21	21

Note:

NA - Not Available

Highlighted cells - Well depths recommended for use based on comparison of the available data

Table 2-2
Comparison of Monitoring Well Screened Intervals from Various Sources
PM Resources, Inc., Bridgeton, Missouri

Monitoring Well	MDNR Approval Memo	MW Certification Records	Boring Logs	Well Completion Reports	Drillers Notes	Field Boring Logs
	(feet bgs)					
MW1	11-21	11-21	11-21	NA	11-21	NA
MW2A	8-20	8-20	9-20	NA	8-20	NA
MW3	8-20	8-20	10-20	NA	8-20	NA
MW4	24-34	24-34	NA	22.2-32.2	24-34	NA
MW5	11-21	11-21	NA	10.2-20.2	11-21	9-21
MW6	11-21	11-21	NA	10.2-20.2	11-21	9-21
MW7	16-26	16-26	NA	15.7-25.7	16-26	NA
MW8	14-24	14-24	NA	12.7-22.7	14-24	14-24
MW9	7-17	7-17	NA	7.75-17.75	7-17	7-17
MW10	6-16	6-16	NA	4.9-14.9	6-16	NA
MW11	6-16	6-16	NA	4.8-14.8	6-16	NA
MW12	10-20	11-21	NA	9.2-19.2	10-20	NA
MW13	11-21	11-21	NA	8.9-18.9	11-21	NA

Note:

NA - Not Available

Highlighted cells - Screened intervals recommened for use

For MW1, it is our opinion that the 10-foot screened interval that should be used extends from 10.28 – 20.28 feet.

For MW2A, it is our opinion that the 12-foot screened interval that should be used extends from 6.28 – 18.28 feet.

For MW3, it is our opinion that the 12-foot screened interval that should be used extends from 6.17 – 18.17 feet.

Table 2-6
Concentrations of Chemicals Detected in the January 2005 Sampling Event
PM Resources, Inc., St. Louis, Missouri

Parameter	Concentrations of Detected Chemicals (mg/L)													
	MW-1	MW2A	MW3	MW4	MW5	MW6	MW7	MW8	MW9	MW10	MW11	MW11 Dup	MW12	MW13
Heavy Metals (Dissolved) (Total 3 Constituents)														
Barium	0.22	0.33	0.28	0.25	1.3	0.5	0.17	0.42	0.3	0.47	1.0	0.96	0.11	0.45
Chromium						0.025								
Lead					0.0093									0.0062
Heavy Metals (Total) (Total 5 Constituents)														
Arsenic				0.027		0.06			0.024	0.026		0.024	0.082	0.024
Barium	0.29	0.43	0.35	0.55	0.74	1.5	0.44	0.58	1.0	0.76	1.0	1.0	3.1	0.77
Chromium	0.016	0.023	0.022	0.12	0.15	0.13	0.095	0.029	0.11	0.024	0.027	0.019	0.6	0.14
Lead	0.0092	0.0075	0.0086	0.012	0.022	0.01			0.015		0.0053		0.092	0.014
Mercury					0.0004								0.00094	
Volatile Organics (Total 17 Constituents)														
1,2,3-Trimethylbenzene	0.006	0.0075	0.01			0.003								
1,2,4-Trimethylbenzene		0.017	0.034			0.0052								
1,2-Dichlorobenzene		0.0023												
1,3,5-Trimethylbenzene		0.0028	0.012											
2-Butanone (MEK)			0.026											
Acetone			4 E											
Benzene	0.0022	0.013				0.0017		0.0012						
Carbon disulfide						0.0023 J3		0.0018						
Chlorobenzene	0.48	5.4	0.044			0.24		0.32						
Ethylbenzene			0.0075								0.21	0.36		
Isopropylbenzene		0.0033	0.0013			0.01								
Naphthalene	0.018		0.013			0.22					0.27	0.43		
n-Butylbenzene		0.0019				0.0035								
n-Propylbenzene		0.0019	0.0021			0.0049								
sec-Butylbenzene						0.0019								
Tetrahydrofuran												5.0 J4, B2		
Xylene, total		0.062	0.072								0.89	1.4		
Semivolatile Organics (Total 3 Constituents)														
2-Methylnaphthalene		0.016				0.1 E					0.36 E	0.34 E		
Bis(2-ethylhexyl)phthalate						0.012								
Naphthalene		0.065				0.18 E					0.18 E	0.31 E		
Chlorinated Pesticides (Total 3 Constituents)														
Chlordane						0.051								
gamma-BHC (Lindane)											0.00077	0.0027		0.00051
Toxaphene	0.27	0.56	0.081				0.053	0.031		0.011		0.064		
Organophosphorus Pesticides (Total 1 Constituent)														
Diazinon											0.019	0.027		

Laboratory Qualifiers:

E - GTL (EPA) - Greater than upper calibration limit: Actual value is known to be greater than the upper calibration range.

J3 - The associated batch QC was outside the established quality control range for precision.

J4 - The associated batch QC was outside the established quality control range for accuracy.

B2 - (ESC) - The detection limit has been elevated due to blank contamination.

Table 2-7
Number of Chemicals Detected in the January 2005 Sampling Event
PM Resources, Inc., St. Louis, Missouri

Parameter	Number of Chemicals Detected													
	MW-1	MW2A	MW3	MW4	MW5	MW6	MW7	MW8	MW9	MW10	MW11	MW11 Dup	MW12	MW13
Heavy Metals (Dissolved and Total)	3	3	3	4	4	4	2	2	4	3	3	3	5	4
Volatile Organics	4	10	11	0	0	10	0	3	0	0	2	4	0	0
Semivolatile Organics	0	2	0	0	0	3	0	0	0	0	2	2	0	0
Chlorinated Pesticides	1	1	1	0	0	1	1	1	0	1	1	2	0	1
Organophosphorus Pesticides	0	0	0	0	0	0	0	0	0	0	1	1	0	0
Chlorinated Herbicides	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	8	16	15	4	4	17*	3	6	4	4	9	11*	5	5

Note:

* Total was reduced by one since naphthalene was detected in these monitoring wells by both VOCs and SVOCs analysis.

Table 2-8
Tentatively Identified Compounds by Semi-volatile Organic Analysis
PM Resources, Inc., St. Louis, Missouri

Chemical	CAS Number	Concentrations of Detected Chemicals (mg/L)													
		MW-1	MW2A	MW3	MW4	MW5	MW6	MW7	MW8	MW9	MW10	MW11	MW11 Dup	MW12	MW13
1,2-Benzenedicarboxylic acid, diisobutyl ester	28553-12-0										X		X		X
1,2-Benzenedicarboxylic acid, diisopropyl ester	131-16-8										X				
1,2-Benzenedicarboxylic acid, dimethyl-	2853-12-0			X		X									
1H-Indane, 2,3-dihydro-4,7-dimethyl-	6682-71-9						X					X			
2,6,10,14,18,22-Tetracosahexaene....	111-02-4			X										X	
2-Propanol, 1-[1-methyl-2-(2-propyl)]-	55956-25-7									X					
9-Octadecenamide, (z)-	301-02-0											X			
Acetophenone	98-86-2												X		
Benzene, (1-methyl-1-propenyl)-, (z)-	767-79-7											X			
Benzene, 1,3-dimethyl	108-38-3												X		
Benzene, 1,5-dichloro-2-methoxy-3-methyl-	13334-73-1												X		
Chlorobenzene	108-90-7	X	X												
d1-2-ethylhexyl chloroformate	24468-13-1								X						
Erucylamide	112-84-5	X					X	X	X	X	X		X	X	
Ethylbenzene	100-41-4												X		
Ethylidenecyclobutane	1525-21-8				X										
Naphthalene, 1,4,5-trimethyl-	2131-41-1											X			
Naphthalene, 1,4,6-trimethyl-	2131-42-2						X								
Naphthalene, 1,5-dimethyl-	571-61-9												X		
Naphthalene, 1,6,7-trimethyl-	2245-38-7											X			
Naphthalene, 2-(1-methylethyl)-	2027-17-0						X								
Naphthalene, 2,3,6-trimethyl-	829-26-5						X								
Naphthalene, 2,3-dimethyl-	581-40-8						X								
Naphthalene, 2,6-dimethyl-	581-42-0											X			
o-Xylene	95-47-6	X													
p-Benzoquinone	106-51-4		X												
Squalene	7683-64-9		X						X						

Table 2-9
Elevated Detection Limits Due to Dilution Factors >1
PM Resources, Inc., Bridgeton, Missouri

Chemical	MW1	MW2	MW3	MW6	MW7	MW8	MW11	MW11Dup
Acetone*	<1.2 (50)	<6.2 (250)		<0.62 (25)			<5.0 (50)	<5.0 (50)
Chlorobenzene	0.48 (50)	5.4 (250)		0.24 (25)		0.32 (10)	<0.05 (50)	<0.05 (50)
Ethylbenzene		<0.25 (250)					0.21 (50)	0.36 (50)
n-Hexane	<0.5 (50)	<2.5 (250)		<0.25 (25)			<1.0 (100)	<0.5 (50)
Tetrahydrofuran*	<0.25 (50)	<1.2 (250)		<0.12 (25)			<5.0 (50)	5.0 (50)
MTBE	<0.05 (50)	<0.25 (250)	<0.01 (10)	<0.025 (25)		<0.01 (10)	<0.05 (50)	<0.05 (50)
Naphthalene		<1.2 (250)		0.22 (25)			0.27 (50)	0.43 (50)
Xylenes	<0.15 (50)						0.89 (50)	1.4 (50)
Toxaphene	0.27 (20)	0.56 (20)	0.081 (5)		0.053 (2)			0.064 (2)
Chlordane				0.051 (2)				
Gamma-BHC (Lindane)								0.0027 (2)
Method 8141 entire run (all non- detect)				<0.00084 – <0.017 (2)				
Method 8260B entire run							<0.05 - <5.0 (50 – 100) – 3 detects	<0.05 - <5.0 (50) – 4 detects

Notes:

*Chemical also detected in laboratory method blank

Elevated Estimated Quantitation Limits (EQLs) shown for non-detectable results.

Detectable concentrations in **bold**.

Dilution factors in parentheses.

Blank cells indicate dilution factor of 1 and no elevated EQLs.

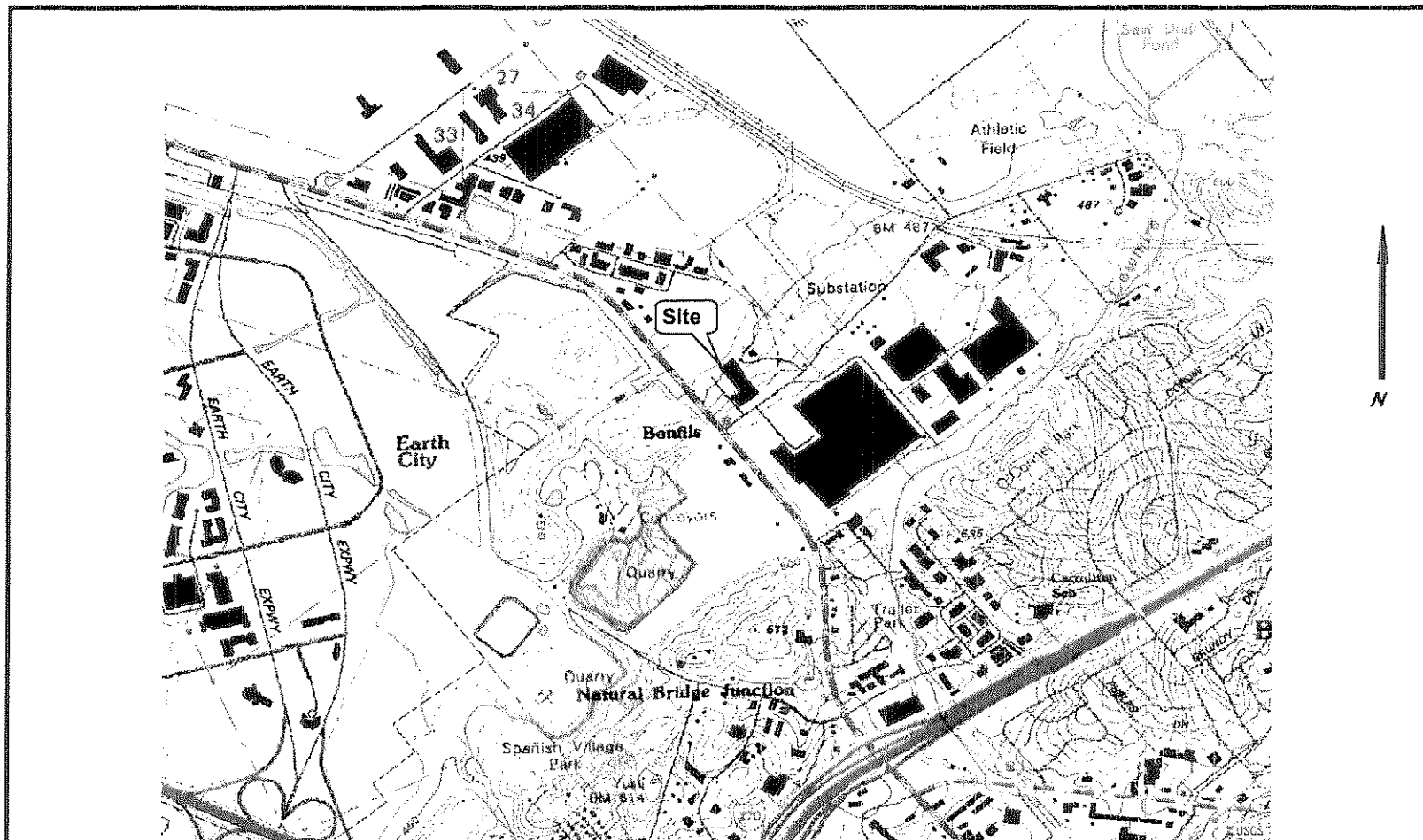


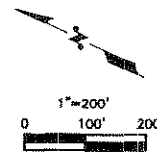
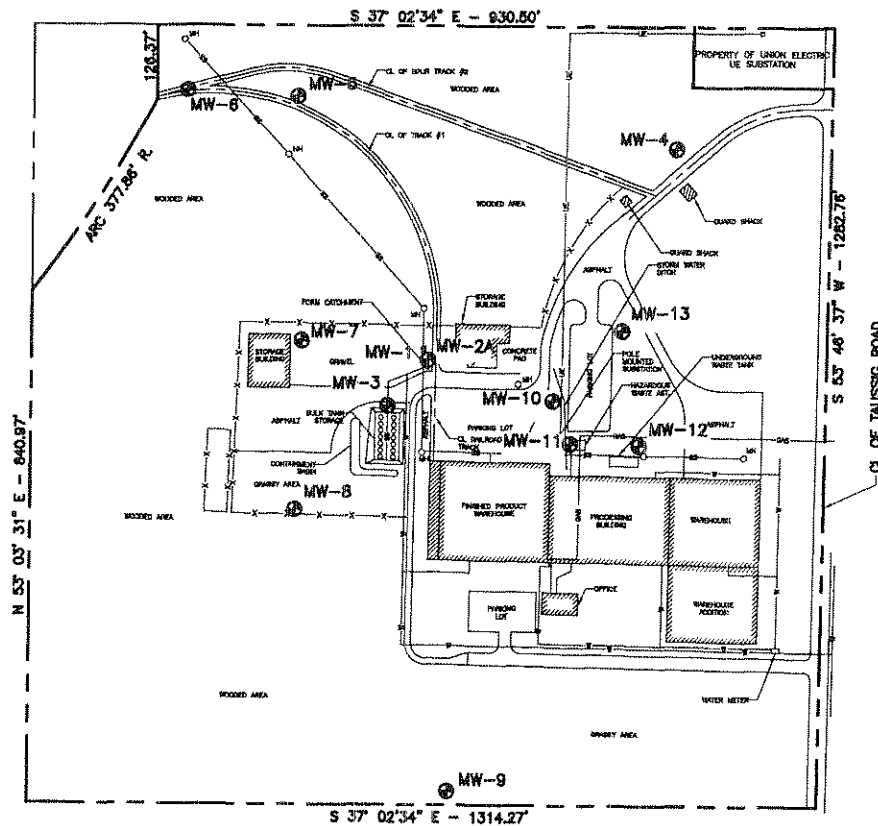
FIGURE 1-1

Site Location Map

Image Courtesy the U.S. Geologic Survey
 © Microsoft Corporation
 Contour Interval Equal to 10 feet.

RAM GROUP, INC.

PM Resources
 13001 St. Charles Rock Road
 Bridgeton, MO
 Project No. 5048



LEGEND

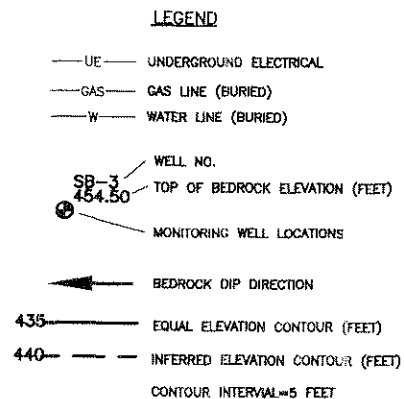
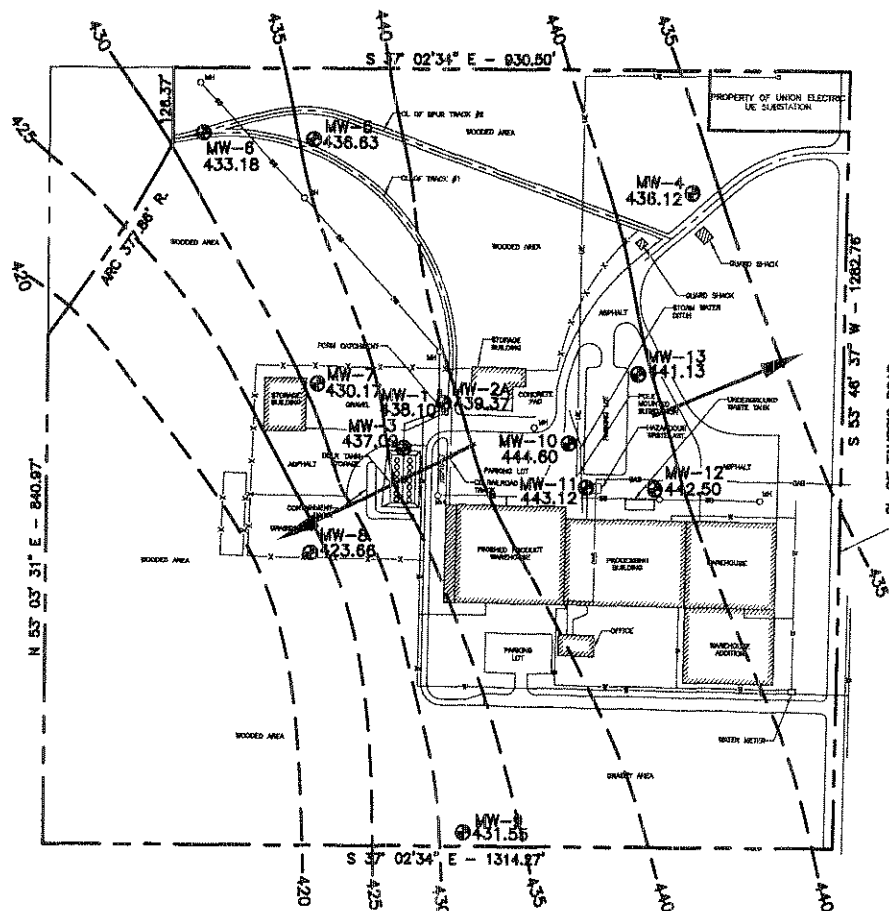
- UE — UNDERGROUND ELECTRICAL
- GAS — GAS LINE (BURIED)
- W — WATER LINE (BURIED)

- SB-3 — WELL NO.
- — MONITORING WELL LOCATIONS

THIS INFORMATION IS PROVIDED FOR VISUAL AID ONLY AND SHOULD NOT BE USED FOR PRECISE DIMENSIONING OF FEATURES DEPICTED. LOCATIONS OF UNDERGROUND AND ABOVE GROUND FEATURES SHOULD BE VERIFIED PRIOR TO ANY SUBSURFACE INVESTIGATION.

FIGURE 1-2
SITE MAP

<p>RAM GROUP INC.</p>	<p>PM RESOURCES 13001 ST. CHARLES ROCK RD BRIDGETON, MISSOURI PROJECT No. 5048</p>
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This figure provides an interpretation of the bedrock surface topography based on the available data. It should be viewed as a simplistic representation of the actual bedrock surface topography, which is often highly irregular.

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FIGURE 2-2
JANUARY, 2005
TOP OF BEDROCK MAP

**RAM
GROUP
INC.**

PM RESOURCES
13001 ST. CHARLES ROCK RD
BRIDGETON, MISSOURI
PROJECT No. 5048

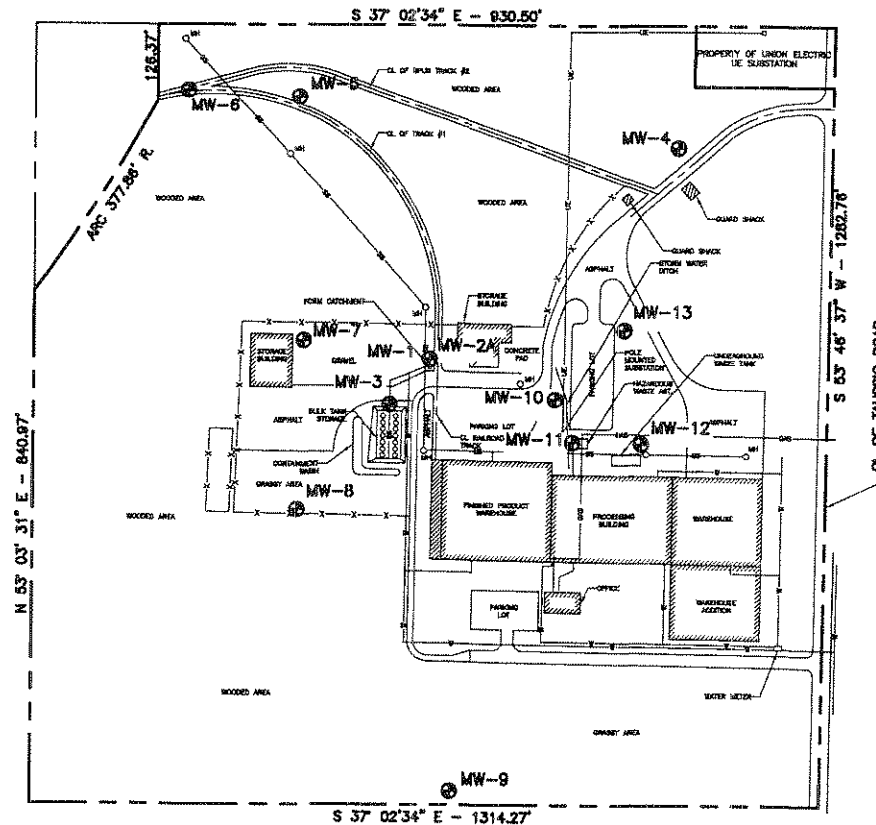
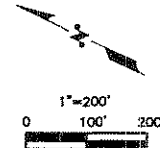


FIGURE 1-2
SITE MAP



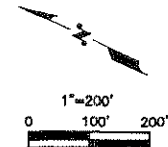
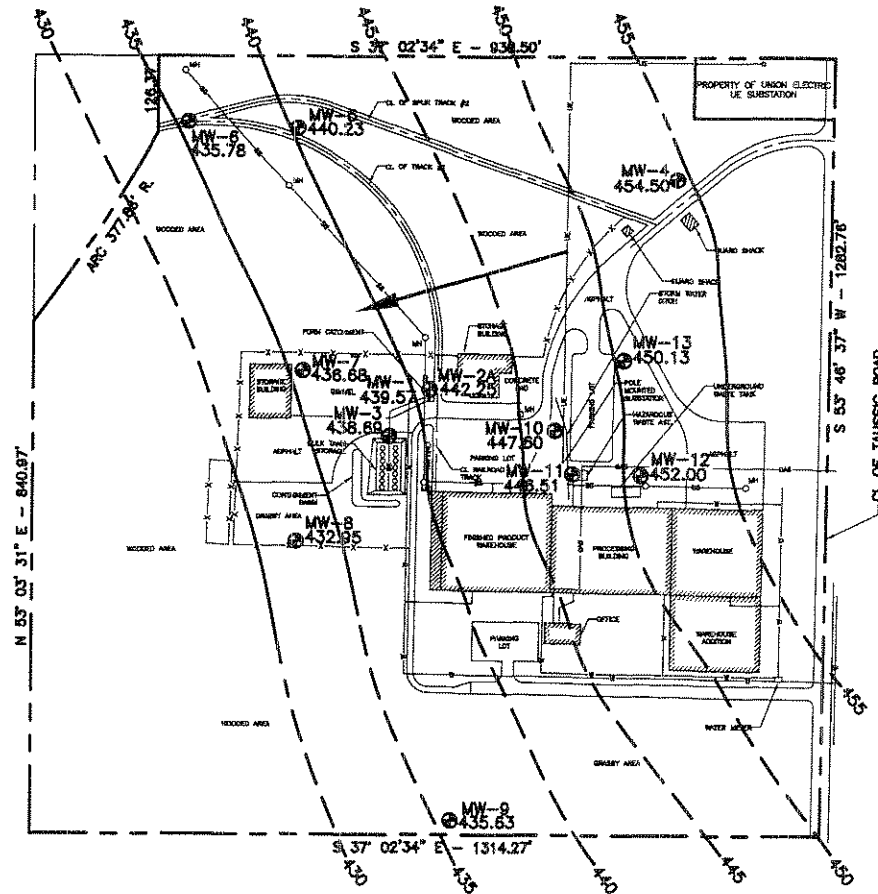
LEGEND

- UE — UNDERGROUND ELECTRICAL
- GAS — GAS LINE (BURIED)
- W — WATER LINE (BURIED)
- SB-3 — WELL NO.
- ⊙ — MONITORING WELL LOCATIONS

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INVESTIGATION.

**RAM
GROUP
INC.**

PM RESOURCES
13001 ST. CHARLES ROCK RD
BRIDGETON, MISSOURI
PROJECT No. 5048

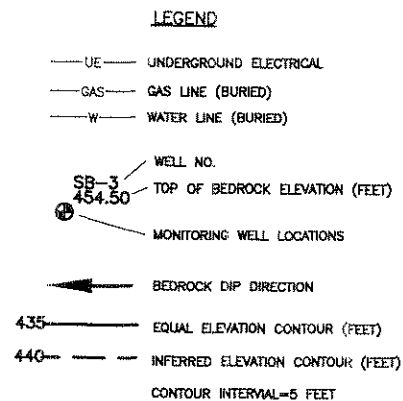
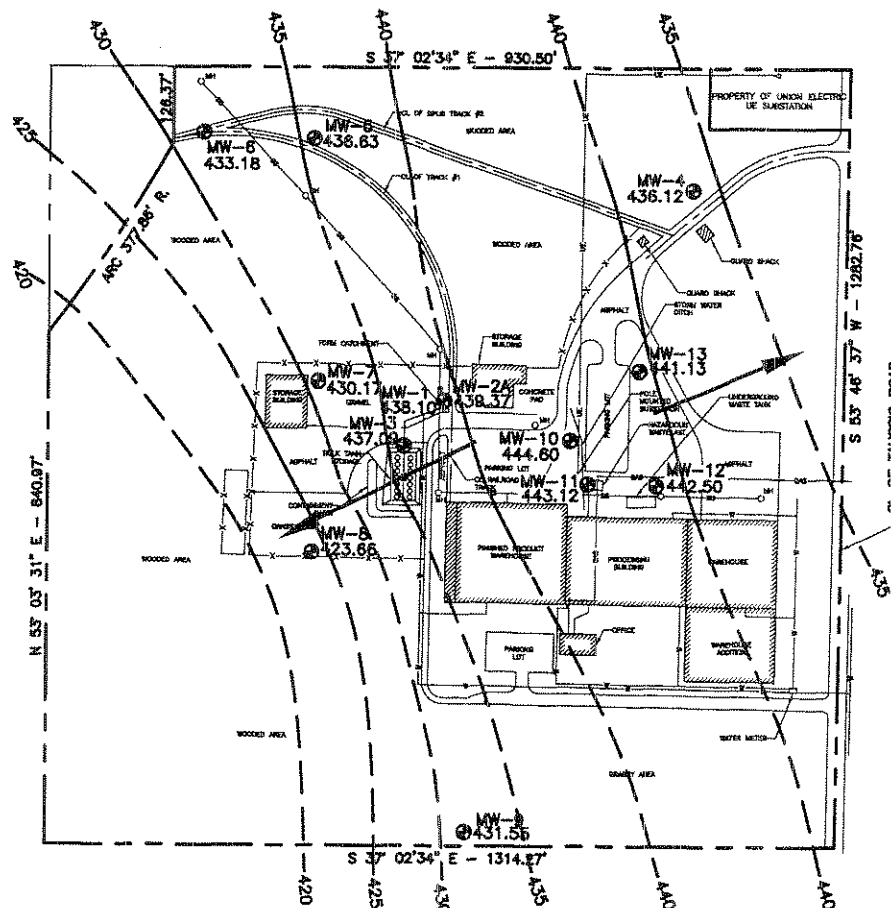


- LEGEND**
- UE — UNDERGROUND ELECTRICAL
 - GAS — GAS LINE (BURIED)
 - W — WATER LINE (BURIED)
 - SB-3 — WELL NO.
 - 454.50 — GW ELEVATION (FEET)
 - ⊙ — POTENTIOMETRIC WELL LOCATIONS
 - ➔ — GROUNDWATER FLOW DIRECTION
 - 430 — EQUAL ELEVATION CONTOUR (FEET)
 - 435 — INFERRED ELEVATION CONTOUR (FEET)
 - CONTOUR INTERVAL=5 FEET

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FIGURE 2-1
 JANUARY, 2005
 GROUNDWATER POTENTIOMETRIC MAP
 (Uppermost Water-Bearing Zone-before development of wells)

RAM GROUP INC.	PM RESOURCES 13001 ST. CHARLES ROCK RD BRIDGETON, MISSOURI PROJECT No. 5048
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This figure provides an interpretation of the bedrock surface topography based on the available data. It should be viewed as a simplistic representation of the actual bedrock surface topography, which is often highly irregular.

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FIGURE 2-2
JANUARY, 2005
TOP OF BEDROCK MAP

RAM GROUP INC.	PM RESOURCES 13001 ST. CHARLES ROCK RD BRIDGETON, MISSOURI PROJECT No. 5048
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